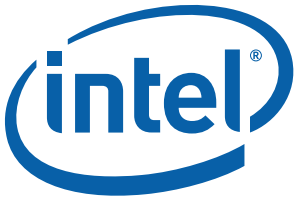

Intel® Desktop Board DH57JG Product Guide

Order Number: E78889-002

Revision History

Revision	Revision History	Date
-001	First release of the Intel® Desktop Board DH57JG Product Guide	January 2010
-002	Second release of the Intel® Desktop Board DH57JG Product Guide	March 2010

If an FCC declaration of conformity marking is present on the board, the following statement applies:

FCC Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation, 5200 N.E. Elam Young Parkway, Hillsboro, OR 97124
1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications to the equipment not expressly approved by Intel Corporation could void the user's authority to operate the equipment.

Tested to comply with FCC standards for home or office use.

Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numerique német pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le broullage radioélectrique édicté par le ministére des Communications du Canada.

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Preface

This Product Guide gives information about board layout, component installation, BIOS update, and regulatory requirements for Intel® Desktop Board DH57JG.

Intended Audience

The Product Guide is intended for technically qualified personnel. It is not intended for general audiences.

Use Only for Intended Applications

All Intel Desktop Boards are evaluated as Information Technology Equipment (I.T.E.) for use in personal computers (PC) for installation in homes, offices, schools, computer rooms, and similar locations. The suitability of this product for other PC or embedded non-PC applications or other environments, such as medical, industrial, alarm systems, test equipment, etc. may not be supported without further evaluation by Intel.

Document Organization

The chapters in this Product Guide are arranged as follows:

1 Desktop Board Features: a summary of product features

2 Installing and Replacing Desktop Board Components: instructions on how to install the Desktop Board and other hardware components

3 Updating the BIOS: instructions on how to update the BIOS

A Error Messages and Indicators: information about BIOS error messages and beep codes

B Regulatory Compliance: describes the board's adherence to safety standards and EMC regulations and its product certifications

Conventions

The following conventions are used in this manual:

CAUTION

Cautions warn the user about how to prevent damage to hardware or loss of data.

NOTE

Notes call attention to important information.

Terminology

The table below gives descriptions of some common terms used in the product guide.

Term	Description
GB	Gigabyte (1,073,741,824 bytes)
GHz	Gigahertz (one billion hertz)
KB	Kilobyte (1024 bytes)
MB	Megabyte (1,048,576 bytes)
Mb	Megabit (1,048,576 bits)
MHz	Megahertz (one million hertz)

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1 Desktop Board Features

This chapter briefly describes the features of Intel® Desktop Board DH57JG. Table 1 summarizes the major features of the Desktop Board.

Table 1. Feature Summary

Form Factor	Mini-ITX (170.18 millimeters [6.7 inches] x 170.18 millimeters [6.7 inches])
Processor	• Intel® Core™ i5-600 series, Intel® Core™ i3, and Intel® Pentium processors in an LGA1156 socket: — Integrated graphics processing (processors with Intel® HD Graphics) — External graphics interface controller — Integrated memory controller
Chipset	Intel® H57 Express Chipset consisting of the Intel® H57 Express Platform Controller Hub (PCH)
Memory	• Two 240-pin DDR3 SDRAM Dual Inline Memory Module (DIMM) sockets • Dual Channel DDR3 1333 MHz and DDR3 1066 MHz support • Support for 1 Gb and 2 Gb memory technology • Support for up to 8 GB of system memory with two DIMMs using 2 Gb memory technology • Support for non-ECC memory
Graphics	• Integrated graphics support for processors with Intel HD Graphics: — High-Definition Multi-media Interface* (HDMI*) — DVI-I • Discrete graphics support for PCI Express* 2.0 x16 add-in graphics card
Audio	• 10-channel (7.1+2) Intel® High Definition Audio (Intel® HD Audio) using a Realtek* ALC889 audio codec • 8-channel (7.1) Intel HD Audio via the HDMI port
Expansion Capabilities	One PCI Express 2.0 x16 add-in card connector

continued

Table 1. Feature Summary (continued)

Peripheral Interfaces	• Twelve USB 2.0 ports: — Six ports are implemented with stacked back panel connectors — Six front panel ports are implemented with three dual-port internal headers • Four internal Serial ATA (SATA) 3.0 Gb/s ports • One external SATA (eSATA) 3.0 Gb/s port • One serial port header
LAN Support	Intel® 82578DC Gigabit (10/100/1000 Mb/s) Ethernet LAN controller including an RJ-45 back panel connector with integrated status LEDs
BIOS	• Intel® BIOS resident in an SPI Flash device • Support for Advanced Configuration and Power Interface (ACPI), Plug and Play, and SMBIOS
Instantly Available PC Technology	• Support for PCI Local Bus Specification Revision 2.3 • Support for PCI Express Base Specification Revision 2.0 • Suspend to RAM support • Wake on PCI Express, LAN, front panel, serial, and USB ports
Hardware Management	• Intel® Quiet System Technology (Intel® QST) implemented through the Intel® Management Engine (Intel® ME) in the Intel H57 PCH • Voltage sense to detect out of range power supply voltages • Thermal sense to detect out of range thermal values • Two fan headers using PWM control • 4-pin headers for processor and chassis fans • 4-wire and 3-wire (linear) fan speed control support for the chassis fan • Support for Platform Environmental Control Interface (PECI)

Supported Operating Systems

The Desktop Board supports the following operating systems:

- Microsoft Windows* 7 Ultimate 64-bit edition
- Microsoft Windows 7 Ultimate 32-bit edition
- Microsoft Windows 7 Professional 64-bit edition
- Microsoft Windows 7 Professional 32-bit edition
- Microsoft Windows 7 Home Premium 64-bit edition
- Microsoft Windows 7 Home Premium 32-bit edition
- Microsoft Windows 7 Starter 64-bit edition
- Microsoft Windows 7 Starter 32-bit edition
- Microsoft Windows 7 Home Basic 32-bit edition
- Microsoft Windows Vista* Ultimate 32-bit edition
- Microsoft Windows Vista Business 32-bit edition
- Microsoft Windows Vista Home Premium 32-bit edition
- Microsoft Windows Vista Home Basic 32-bit edition
- Microsoft Windows Vista Ultimate 64-bit edition
- Microsoft Windows Vista Business 64-bit edition
- Microsoft Windows Vista Home Premium 64-bit edition
- Microsoft Windows Vista Home Basic 64-bit edition
- Microsoft Windows* XP Media Center Edition 2005
- Microsoft Windows XP Professional
- Microsoft Windows XP Professional x64 Edition
- Microsoft Windows XP Home

Desktop Board Components

Figure 1 shows the approximate location of the major components on Intel Desktop Board DH57JG.

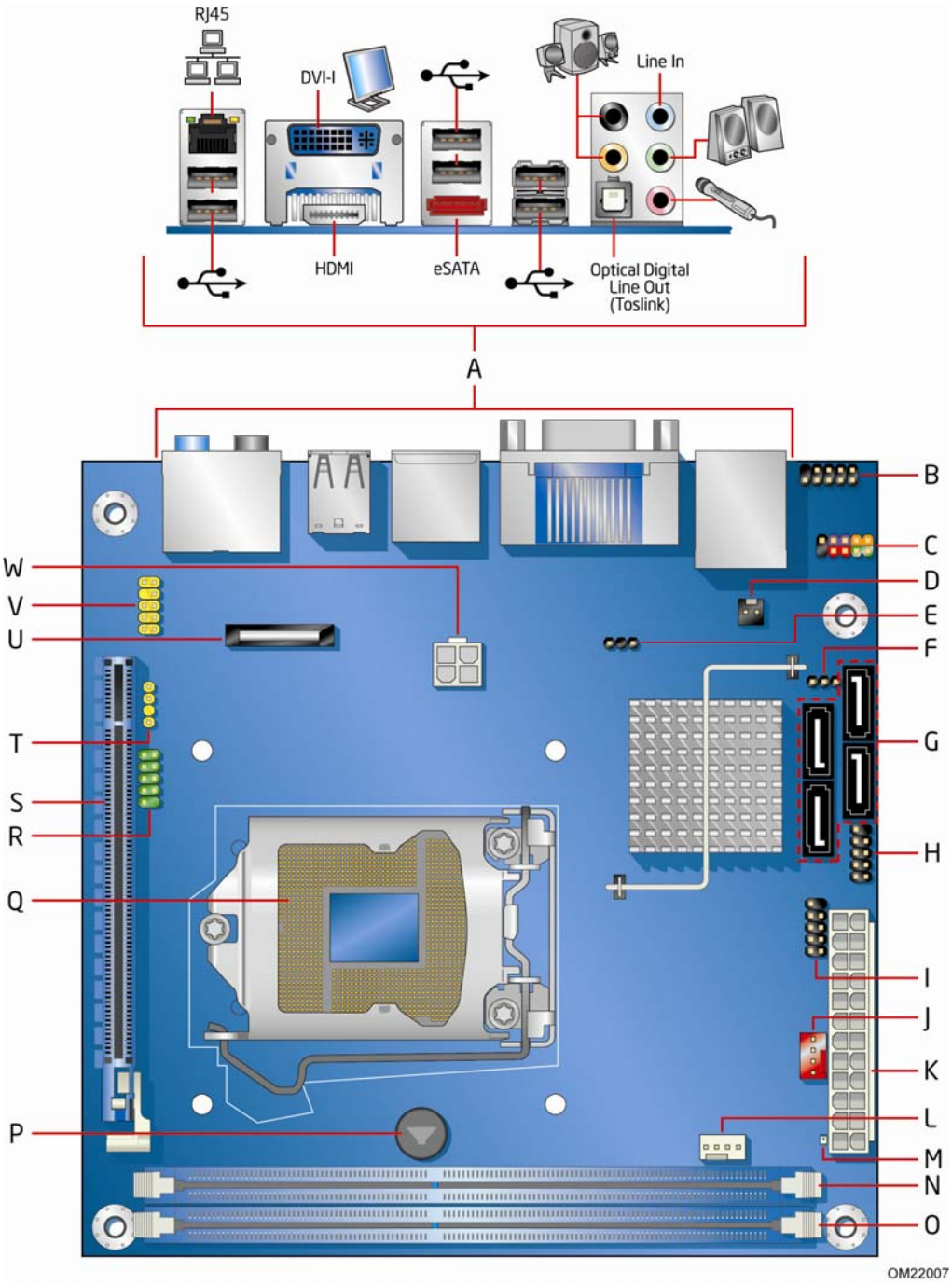


Figure 1. Intel Desktop Board DH57JG Components

Table 2. Intel Desktop Board DH57JG Components

Label	Description
A	Back panel connectors
B	Front panel USB 2.0 header
C	Front panel header
D	Chassis intrusion header
E	Alternate front panel power LED header
F	BIOS configuration jumper block
G	Serial ATA connectors (4)
H	Front panel USB 2.0 header
I	Front panel USB 2.0 header
J	Chassis fan header
K	Main power connector (2 x 12 pin)
L	Processor fan header
M	Standby power indicator LED
N	Channel A DIMM 0 socket
O	Channel B DIMM 0 socket
P	Speaker
Q	Processor socket
R	Serial port header
S	PCI Express 2.0 x16 add-in card connector
T	S/PDIF header
U	Battery
V	Front panel audio header
W	12 V processor core voltage connector (2 x 2 pin)

Online Support

For more information on Intel Desktop Board DH57JG consult the following online resources:

• Intel Desktop Board DH57JG	http://www.intel.com/products/motherboard/DH57JG/index.htm
• Desktop Board Support	http://www.intel.com/support/motherboards/desktop/DH57JG
• Available configurations for Intel Desktop Board DH57JG	http://www.intel.com/products/motherboard/DH57JG/index.htm
• Supported processors	http://processormatch.intel.com
• Chipset information	http://www.intel.com/products/desktop/chipsets/index.htm
• BIOS and driver updates	http://downloadcenter.intel.com/
• Integration information	http://www.intel.com/support/go/buildit
• Mini-ITX chassis compatibility	http://www.intel.com/go/miniitx

Processor

CAUTION

Failure to use an appropriate power supply and/or not connecting the 12 V (2 x 2 pin) power connector to the Desktop Board may result in damage to the board, or the system may not function properly.

Intel Desktop Board DH57JG supports the Intel Core i5-600 series, Intel Core i3, and Intel Pentium processors in an LGA1156 socket. Processors are not included with the Desktop Board and must be purchased separately. The processor connects to the Desktop Board through the LGA1156 socket.

For information on supported processors for Intel Desktop Board DH57JG, go to http://processormatch.intel.com.

Intel® H57 Express Chipset

The Intel H57 Express Chipset, consisting of the Intel H57 Platform Controller Hub (PCH), provides interfaces to the processor and the USB, SATA, LPC, audio, network, display, and PCI Express x1 interfaces. The Intel H57 PCH is a centralized controller for the board's I/O paths.

Main Memory

NOTE

To be fully compliant with all applicable Intel® SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. If your memory modules do not support SPD, you will see a notification to this effect on the screen at power up. The BIOS will attempt to configure the memory controller for normal operation.

The board has two DIMM sockets and supports the following memory features:

- Two independent memory channels with interleaved mode support
- Support for non-ECC, unbuffered, single-sided or double-sided DIMMs with x8 organization and single-sided DIMMs with x16 organization
- 8 GB maximum total system memory (with 2 Gb memory technology)
- Minimum total system memory: 512 MB using a 1 Gb x16 module
- Serial Presence Detect
- DDR3 1333 MHz and DDR3 1066 MHz SDRAM DIMMs

NOTE

32-bit operating systems are limited to a maximum of 4 GB of memory. These operating systems will report less than 4 GB because of the memory used by add-in graphics cards and other system resources.

Graphics Subsystem

The board supports system graphics through either Intel HD Graphics or a PCI Express 2.0 x16 add-in graphics card.

Integrated Graphics

The board supports integrated graphics through the Intel® Flexible Display Interface (FDI) for processors with Intel HD Graphics.

Intel® HD Graphics

The Intel HD Graphics controller features the following:

- 3D Features
  - DirectX10* and OpenGL* 2.1 compliant
  - Shader Model 4.0
- Video
  - Hi-Definition content at up to 1080p resolution
  - Hardware accelerated MPEG-2, VC-1/WMV, and H.264/AVC High-Definition video formats
  - Intel® Clear Video HD Technology with advanced video processing
- Dynamic Video Memory Technology (DVMT) 5.0 support including support of up to 1.7 GB Video Memory with a 4 GB and above system memory configuration

High-Definition Multimedia Interface* (HDMI*)

The HDMI port supports standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable. It is compatible with all ATSC and DVB HDTV standards and supports eight full range channels at 24-bit/96-kHz audio of lossless audio formats such Dolby* TrueHD or DTS* HD Master Audio. The maximum supported resolution is 1920 x 1200 at 60 Hz refresh (WUXGA). The HDMI port is compliant with the HDMI 1.3 specification.

The HDMI port is enabled for the POST whenever a monitor is attached, regardless of the DVI-I connector status.

Depending on the type of add-in card installed in the PCI Express x16 connector, the HDMI port will behave as described in Table 3.

Table 3. HDMI Port Status Conditions

PCI Express x16 Connector Status	HDMI Port Status
No add-in card installed	Enabled
Non-video PCI Express x1, x4, or x8 add-in card installed	Enabled
PCI Express x4, x8, or x16 graphics add-in card installed	Disabled

Digital Visual Interface (DVI-I)

The DVI-I port supports both digital and analog DVI displays. The maximum supported resolution is 1900 x 1200 (WUXGA). The DVI port is compliant with the DVI 1.0 specification. The DVI analog output can be converted to VGA using a DVI-VGA converter.

Depending on the type of add-in card installed in the PCI Express x16 connector, the DVI port will behave as described in Table 4.

Table 4. DVI Port Status Conditions

PCI Express x16 Connector Status	DVI Digital (DVI-D) Port Status	DVI Analog (DVI-A) Port Status(Note)
No add-in card installed	Enabled	Enabled
Non-video PCI Express x1, x4, or x8 add-in card installed	Enabled	Enabled
PCI Express x4, x8, or x16 graphics add-in card installed	Disabled	Disabled

Note: DVI analog output can be converted to VGA with a DVI-VGA converter.

VGA Displays

The DVI-I port supports VGA displays when a DVI-I to VGA converter is used. The maximum supported resolution is 2560 x 1600 (WQXGA).

The DVI-A port is enabled for the POST whenever a monitor is attached, regardless of the HDMI connector status.

PCI Express* x16 Graphics

The Intel Core i5-600 series, Intel Core i3, and Intel Pentium processors in an LGA1156 socket support discrete add-in graphics cards via the PCI Express 2.0 x16 add-in card connector. The board supports the following PCI Express speeds:

- PCI Express 2 frequency of 2.5 GHz which results in 5.0 Gb/s in each direction (500 MB/s) per lane. The maximum theoretical bandwidth on the interface is 8 GB/s in each direction, simultaneously, when operating in x16 mode.
- PCI Express 1.1 frequency of 1.25 GHz resulting in 2.5 Gb/s each direction (250 MB/s) per lane. The maximum theoretical bandwidth on the interface is 4 GB/s in each direction, simultaneously, when operating in x16 mode.

Audio Subsystem

The board supports Intel High Definition Audio through a Realtek ALC889 audio codec as well as through the HDMI interface.

The Realtek ALC889-based audio subsystem provides the following features:

- Advanced jack sense for the back panel audio connectors that enables the audio codec to recognize the device that is connected to an audio port
- Stereo input and output via back panel connectors
- Headphone and Mic in functions for front panel audio connectors
- 108 dB Signal-to-Noise ratio (SNR) playback (DAC) quality and 104 dB SNR recording (ADC) quality
- Content protection for full-rate loss-less DVD Audio and Blu-ray Disc* audio content playback (with selected versions of media player software)

The audio subsystem supports the following audio interfaces:

- 7.1 analog back panel audio connectors
- Optical S/PDIF-out back panel audio connector
- S/PDIF-out header with support for optical or coaxial S/PDIF output
- Front panel audio header with support for Intel HD Audio and AC '97 Audio

Table 5 lists the supported functions of the front panel and back panel audio jacks.

Table 5. Audio Jack Retasking Support

Audio Jack	Micro-phone	Head-phones	Front Speakers	Line In	Side Surround	Rear Surround	Center/ Sub
FP Green		Default					
FP Pink	Default						
BP Blue				Default			
BP Green		Control panel	Default				
BP Pink					Default		
BP Black						Default	
BP Orange							Default

LAN Subsystem

The LAN subsystem includes:

- Intel 82578DC Gigabit (10/100/1000 Mb/s) Ethernet LAN controller
- RJ-45 LAN connector with integrated status LEDs

LAN software and drivers are available at http://downloadcenter.intel.com/.

Two LEDs are built into the RJ-45 LAN connector located on the back panel (see Figure 2). These LEDs indicate the status of the LAN as shown in Table 6.

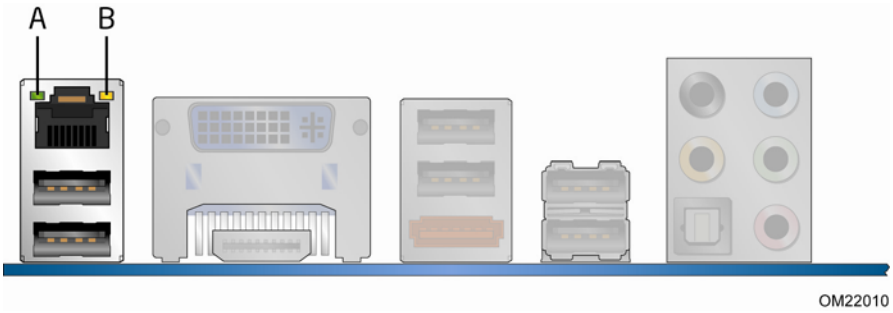


Figure 2. LAN Connector LEDs

Table 6. LAN Connector LEDs

LED	LED Color	LED State	Indicates
A (Link/Activity)	Green	Off	LAN link is not established
		On	LAN link is established
		Blinking	LAN activity is occurring
B (Link Speed)	N/A	Off	10 Mb/s data rate
	Green	On	100 Mb/s data rate
	Yellow	On	1000 Mb/s data rate

USB 2.0 Support

The board supports up to twelve USB 2.0 ports provided by two EHCI host controllers in the Intel H57 PCH that allow the use of EHCI-compatible drivers.

The port arrangement is as follows:

- Six ports via stacked back panel connectors
- Six front panel ports via three dual-port internal headers

USB 2.0 support requires both an operating system and drivers that fully support USB 2.0 transfer rates.

Serial ATA Support

The board provides four internal SATA connectors and one back panel eSATA connector which support one storage device per connector.

Expandability

Intel Desktop Board DH57JG provides one PCI Express 2.0 x16 connector for system expansion.

Legacy I/O

The board's Legacy I/O Controller provides the following legacy features:

- One serial port header
- Serial IRQ interface compatible with serialized IRQ support for PCI Conventional bus systems
- Intelligent power management, including a programmable wake-up event interface

The BIOS Setup program provides configuration options for the Legacy I/O controller.

BIOS

The BIOS provides the Power-On Self-Test (POST), the BIOS Setup program, and the PCI Express and SATA auto-configuration utilities. The BIOS is stored in the Serial Peripheral Interface (SPI) Flash device.

The BIOS can be updated by following the instructions in Chapter 3 starting on page 59.

Serial ATA Auto Configuration

If you install a SATA device (such as a hard drive) in your computer, the auto-configuration utility in the BIOS automatically detects and configures the device for your computer. You do not need to run the BIOS Setup program after installing a SATA device. You can override the auto-configuration options by specifying manual configuration in the BIOS Setup program.

PCI*/PCI Express Auto Configuration

If you install a PCI Express add-in card in your computer, the PCI Express auto-configuration utility in the BIOS automatically detects and configures the resources (IRQs, DMA channels, and I/O space) for that add-in card. You do not need to run the BIOS Setup program after you install a PCI Express add-in card.

Security Passwords

The BIOS includes security features that restrict whether the BIOS Setup program can be accessed and who can boot the computer. A supervisor password and a user password can be set for the BIOS Setup and for booting the computer, with the following restrictions:

- The supervisor password gives unrestricted access to view and change all Setup options. If only the supervisor password is set, pressing <Enter> at the password prompt of Setup gives the user restricted access to Setup.
- If both the supervisor and user passwords are set, you must enter either the supervisor password or the user password to access Setup. Setup options are then available for viewing and changing depending on whether the supervisor or user password was entered.
- Setting a user password restricts who can boot the computer. The password prompt is displayed before the computer is booted. If only the supervisor password is set, the computer boots without asking for a password. If both passwords are set, you can enter either password to boot the computer.

For instructions on resetting the password, go to Clearing Passwords on page 52.

Hardware Management

The hardware management features of Intel Desktop Board DH57JG enable the board to be compatible with the Wired for Management (WfM) specification. The board has several hardware management features including the following:

- Fan speed monitoring and control
- Thermal and voltage monitoring
- Chassis intrusion detection

Hardware Monitoring and Fan Speed Control

The features of the hardware monitoring and fan speed control include:

- Intel Quiet System Technology, delivering acoustically-optimized thermal management
- Thermal sensors in the processor and Intel H57 PCH, as well as near the processor voltage regulators and system memory

NOTE

The minimum thermal reporting threshold for the Intel H57 PCH is 59 °C. The PCH's thermal sensor will display 59 °C until the temperature rises above this point.

- Monitoring of system voltages to detect levels above or below acceptable values
- Thermally monitored closed-loop fan control for all fans that can adjust fan speed as needed

Fan Monitoring

Fan monitoring can be observed via the BIOS Setup program, Intel® Desktop Utilities, or third-party software.

Chassis Intrusion

The board supports a chassis security feature that detects if the chassis cover has been removed. The security feature uses a mechanical switch on the chassis that can be connected to the chassis intrusion header on the Desktop Board. See Figure 1 for the location of the chassis intrusion header.

Power Management

Power management is implemented at several levels, including software support through the Advanced Configuration and Power Interface (ACPI) and the following hardware support:

- Power connectors
- Fan headers
- LAN wake capabilities
- Instantly Available PC technology (Suspend to RAM)
- +5 V standby power indicator LED
- Wake from USB
- PCI Express WAKE# signal support
- Wake from serial port

Software Support

ACPI

ACPI gives the operating system direct control over the power management and Plug and Play functions of a computer. The use of ACPI with the Desktop Board requires an operating system that provides full ACPI support.

Hardware Support

Power Connectors

ATX12V-compliant power supplies can turn off the computer power through system control. When an ACPI-enabled computer receives the correct command, the power supply removes all non-standby voltages.

When resuming from an AC power failure, the computer returns to the power state it was in before power was interrupted (either on or off). The computer's response can be set by using the Last Power State feature in the BIOS Setup program's Boot menu.

The Desktop Board has two power connectors. See Figure 23 on page 50 for the location of the power connectors.

Fan Headers

The function/operation of the fans is as follows:

- The fans are on when the board is in the ACPI S0 or S1 state.
- The fans are off when the computer is in the ACPI S3, S4, or S5 state.
- Each fan header is wired to a tachometer input.
- All fan headers support closed-loop fan control that can adjust the fan speed or switch the fan on or off as needed.
- All fan headers have a +12 V DC connection (up to 12 V DC when using 3-wire chassis fans).
- All fan headers are controlled by Pulse Width Modulation.
- The chassis fan header supports linear fan control on 3-wire fans.

The Desktop Board has a 4-pin processor fan header and a 4-pin chassis fan header compatible with 4-wire and 3-wire chassis fans.

LAN Wake Capabilities

CAUTION

For LAN wake capabilities, the 5 V standby line for the power supply must be capable of delivering adequate +5 V standby current. Failure to provide adequate standby current when using this feature can damage the power supply.

LAN wakeup capabilities enable remote wake-up of the computer through a network. The LAN subsystem monitors network traffic and upon detecting a Magic Packet* frame, it asserts a wake-up signal that powers up the computer.

Instantly Available PC Technology

CAUTION

For Instantly Available PC technology, the 5 V standby line for the power supply must be capable of delivering adequate +5 V standby current. Failure to provide adequate standby current when using this feature can damage the power supply and/or effect ACPI S3 sleep state functionality.

Instantly Available PC technology enables the board to enter the ACPI S3 (Suspend-to-RAM) sleep state. Instantly Available PC technology enables the board to enter the ACPI S3 (Suspend-to-RAM) sleep-state. While in the S3 sleep-state, the computer will appear to be off (the power supply is off and the front panel power LED will behave as configured by the BIOS "S3 State Indicator" option). When signaled by a wake-up device or event, the system quickly returns to its last known wake state. When signaled by a wake-up device or event, the computer quickly returns to its last known awake state.

The Desktop Board supports the *PCI Bus Power Management Interface Specification*. Add-in cards that support this specification can participate in power management and can be used to wake the computer.

The use of Instantly Available PC technology requires operating system support and PCI 2.2 compliant add-in cards, PCI Express add-in cards, and drivers.

+5 V Standby Power Indicator LED

CAUTION

If the AC power has been switched off and the standby power indicator is still lit, disconnect the power cord before installing or removing any devices connected to the board. Failure to do so could damage the board and any attached devices.

The Desktop Board's standby power indicator, shown in Figure 3, is lit when there is standby power still present on the board even when the computer appears to be off. For example, when this green LED is lit, standby power is still present at the memory module sockets and the PCI Express connector.

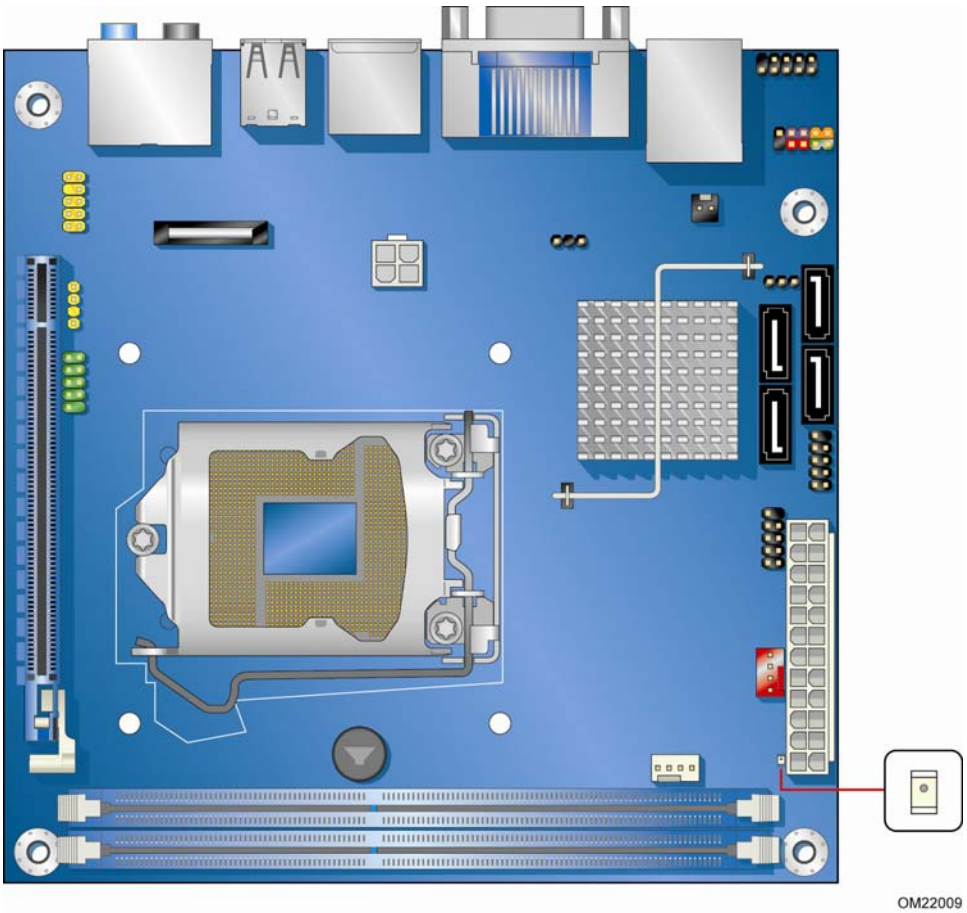


Figure 3. Location of the Standby Power Indicator

For more information on standby current requirements for the Desktop Board, refer to the Technical Product Specification at http://support.intel.com/support/motherboards/desktop/

Wake from USB

NOTE

Wake from USB requires the use of a USB peripheral that supports Wake from USB and an operating system that supports Wake from USB.

USB bus activity wakes the computer from an ACPI S1 or S3 state.

PCI Express WAKE# Signal Wake-up Support

When the WAKE# signal on a PCI Express bus add-in card is asserted, the computer wakes from an ACPI S1, S3, S4, or S5 state.

Wake from Serial Port

Serial port activity wakes the computer from an ACPI S1 or S3 state.

ENERGY STAR*, e-Standby, and ErP Compliance

The US Department of Energy and the US Environmental Protection Agency have continually revised the ENERGY STAR requirements. Intel has worked directly with these two governmental agencies in the definition of the new requirements.

Intel Desktop Board DH57JG meets the following program requirements in an adequate system configuration, including appropriate selection of an efficient power supply:

- Energy Star v5.0, category A
- EPEAT
- Korea e-Standby
- European Union Energy-related Products Directive 2009 (ErP)

For information about ENERGY STAR requirements and recommended configurations, go to http://www.intel.com/go/energystar.

Speaker

A speaker is mounted on the Desktop Board. The speaker provides audible error code (beep code) information during the Power-On Self-Test (POST). Refer to Appendix A for a description of the board's beep codes.

Real-Time Clock Subsystem

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery.

The clock is accurate to ± 13 minutes/year at 25 ºC with standby power applied by the power supply.

NOTE

If the battery and AC power fail, date and time values will be reset and the user will be notified during the POST.

When the battery voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one. Go to page 53 for instructions on how to replace the battery.

2 Installing and Replacing Desktop Board Components

This chapter tells you how to:

- Install the I/O shield
- Install and remove the Desktop Board
- Install and remove a processor
- Install and remove memory
- Install and remove a PCI Express x16 card
- Connect Serial ATA cables
- Connect to the internal headers
- Connect to the audio system
- Connect chassis fan and power supply cables
- Set the BIOS configuration jumper
- Clear passwords
- Replace the battery

Before You Begin

CAUTION

The procedures in this chapter assume familiarity with the general terminology associated with personal computers and with the safety practices and regulatory compliance required for using and modifying electronic equipment.

Disconnect the computer from its power source and from any telecommunications links, networks, or modems before performing any of the procedures described in this chapter. Failure to disconnect power, telecommunications links, networks, or modems before you open the computer or perform any procedures can result in personal injury or equipment damage. Some circuitry on the board can continue to operate even though the front panel power button is off.

NOTE

Thermal Considerations

Intel Desktop Board DH57JG supports Intel Core i5-600 series, and Core i3 processors up to 87 W TDP. The board also supports a discrete graphics card via the PCI Express x16 connector. Thermal considerations are important when choosing a suitable chassis for high end configurations.

Refer to http://www.intel.com/go/miniitx for compatible mini-ITX chassis for Intel Desktop Board DH57JG.

Follow these guidelines before you begin:

- Always follow the steps in each procedure in the correct order.
- Set up a log to record information about your computer, such as model, serial numbers, installed options, and configuration information.
- Electrostatic discharge (ESD) can damage components. Perform the procedures described in this chapter only at an ESD workstation using an antistatic wrist strap and a conductive foam pad. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Installation Precautions

When you install and test the Intel Desktop Board, observe all warnings and cautions in the installation instructions.

To avoid injury, be careful of:

- Sharp pins on connectors
- Sharp pins on printed circuit assemblies
- Rough edges and sharp corners on the chassis
- Hot components (such as processors, voltage regulators, and heat sinks)
- Damage to wires that could cause a short circuit

Observe all warnings and cautions that instruct you to refer computer servicing to qualified technical personnel.

Prevent Power Supply Overload

Do not overload the power supply output. To avoid overloading the power supply, make sure that the calculated total current loads of all the modules within the computer is less than the output current rating of each of the power supplies output circuits plus enough headroom for desktop board power consumption.

Observe Safety and Regulatory Requirements

Read and follow the instructions in this section and the instructions supplied with the chassis and associated modules. If you do not follow these instructions and the instructions provided by the chassis and module suppliers, you increase your safety risk and the possibility of noncompliance with regional laws and regulations. If the instructions for the chassis are inconsistent with these instructions or the instructions for associated modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

For information about the Desktop Board's regulatory compliance, refer to Appendix B.

Installing the I/O Shield

The Desktop Board comes with an I/O shield. When installed in the chassis, the shield blocks radio frequency transmissions, protects internal components from dust and foreign objects, and promotes correct airflow within the chassis.

Install the I/O shield before installing the Desktop Board in the chassis. Place the shield inside the chassis as shown in Figure 4. Press the shield into place so that it fits tightly and securely. If the shield does not fit, obtain a properly sized shield from the chassis supplier.

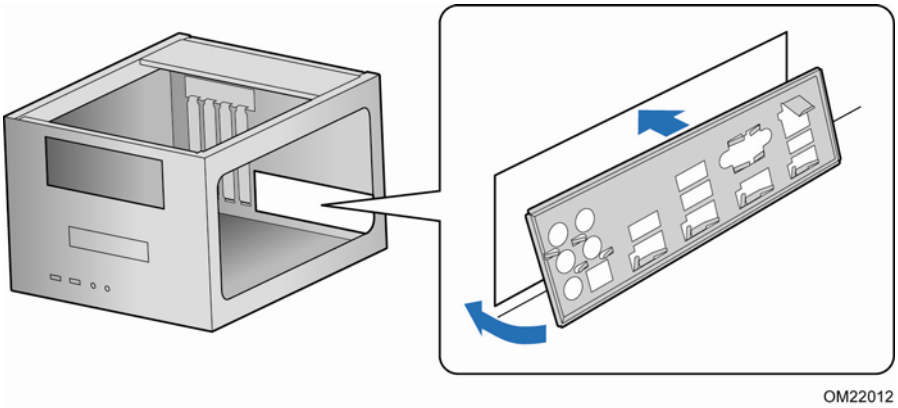


Figure 4. Installing the I/O Shield

Installing and Removing the Desktop Board

CAUTION

Only qualified technical personnel should perform this procedure. Disconnect the computer from its power source before performing the procedures described here. Failure to disconnect the power before you open the computer can result in personal injury or equipment damage.

Refer to your chassis manual for instructions on installing and removing the Desktop Board.

Figure 5 shows the location of the mounting screw holes for Intel Desktop Board DH57JG.

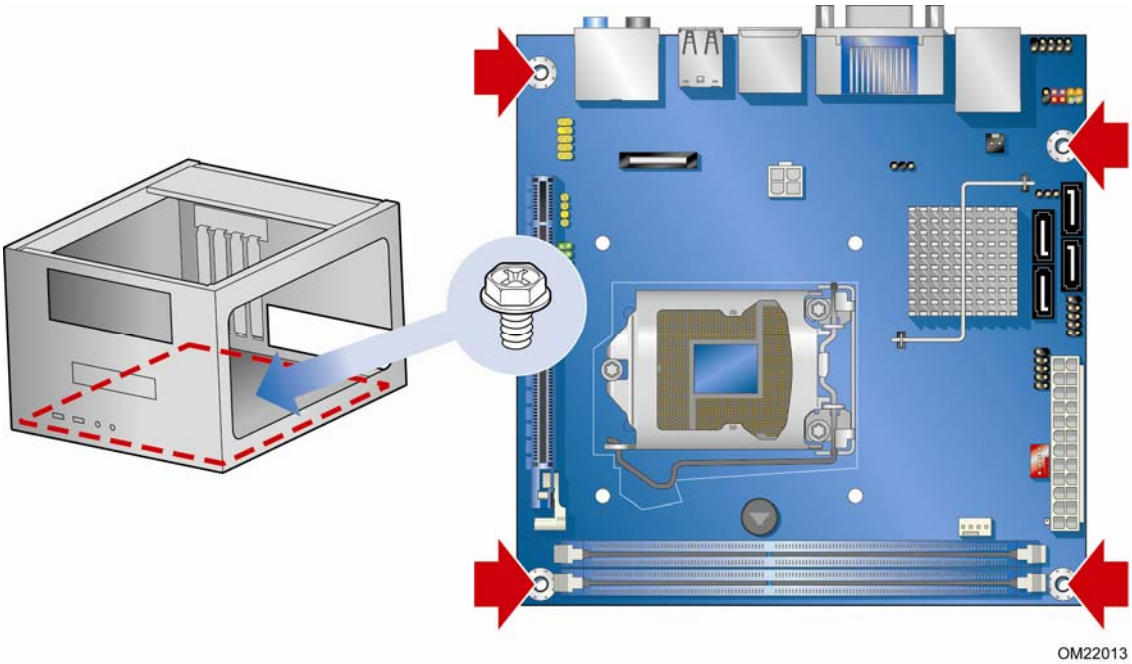


Figure 5. Intel Desktop Board DH57JG Mounting Screw Hole Locations

Installing and Removing a Processor

Instructions on how to install the processor on the Desktop Board are given below.

Installing a Processor

CAUTION

Before installing or removing a processor, make sure the AC power has been removed by unplugging the power cord from the computer; the standby power LED should not be lit (see Figure 3 on page 24). Failure to do so could damage the processor and the board.

To install a processor, follow these instructions:

1. Observe the precautions in "Before You Begin" on page 27.
2. Unlatch the socket lever by pushing the lever down and away from the socket (Figure 6, A and B).

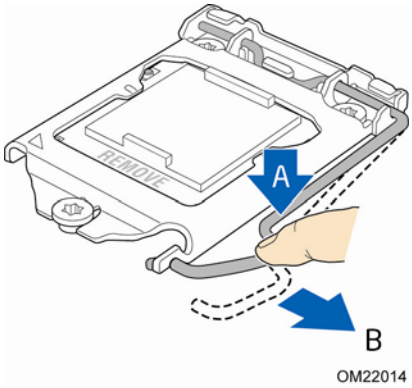


Figure 6. Unlatch the Socket Lever

3. Rotate the socket lever to lift the load plate away from the socket (Figure 7, A). Make sure that the load plate is in the fully open position (Figure 7, B) while being careful not to damage adjacent components.

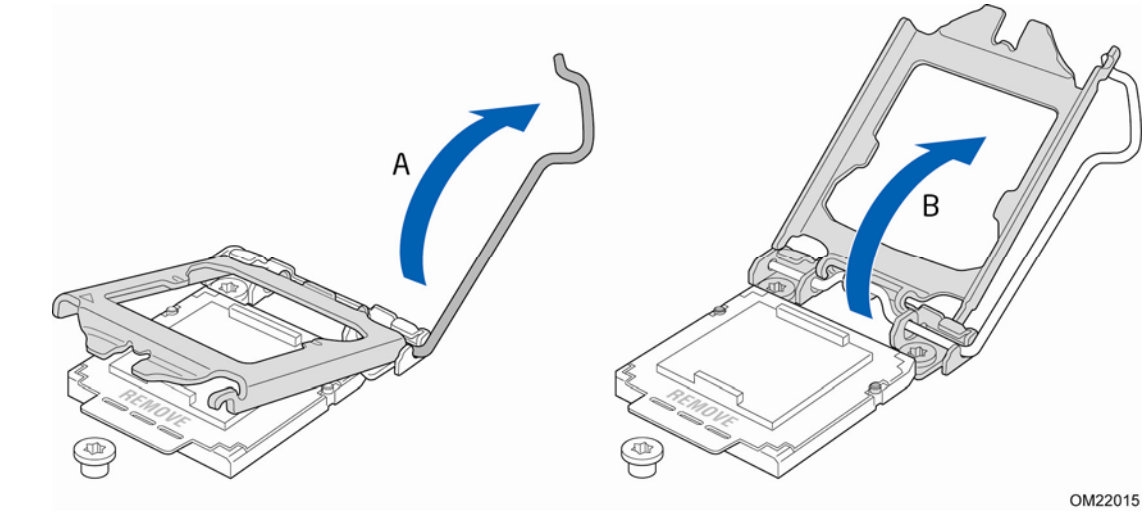


Figure 7. Lift the Load Plate

4. Remove the protective socket cover from the socket by placing your thumb against the front edge of the cover and resting your index finger on the rear grip (Figure 8, A). Lift the front edge of the socket to disengage the cover from the socket and lift the cover up and away from the socket (Figure 8, B). Do not touch the socket contacts.

NOTE

Do not discard the socket cover; save it for possible future use. Always replace the socket cover if you remove the processor from the socket.

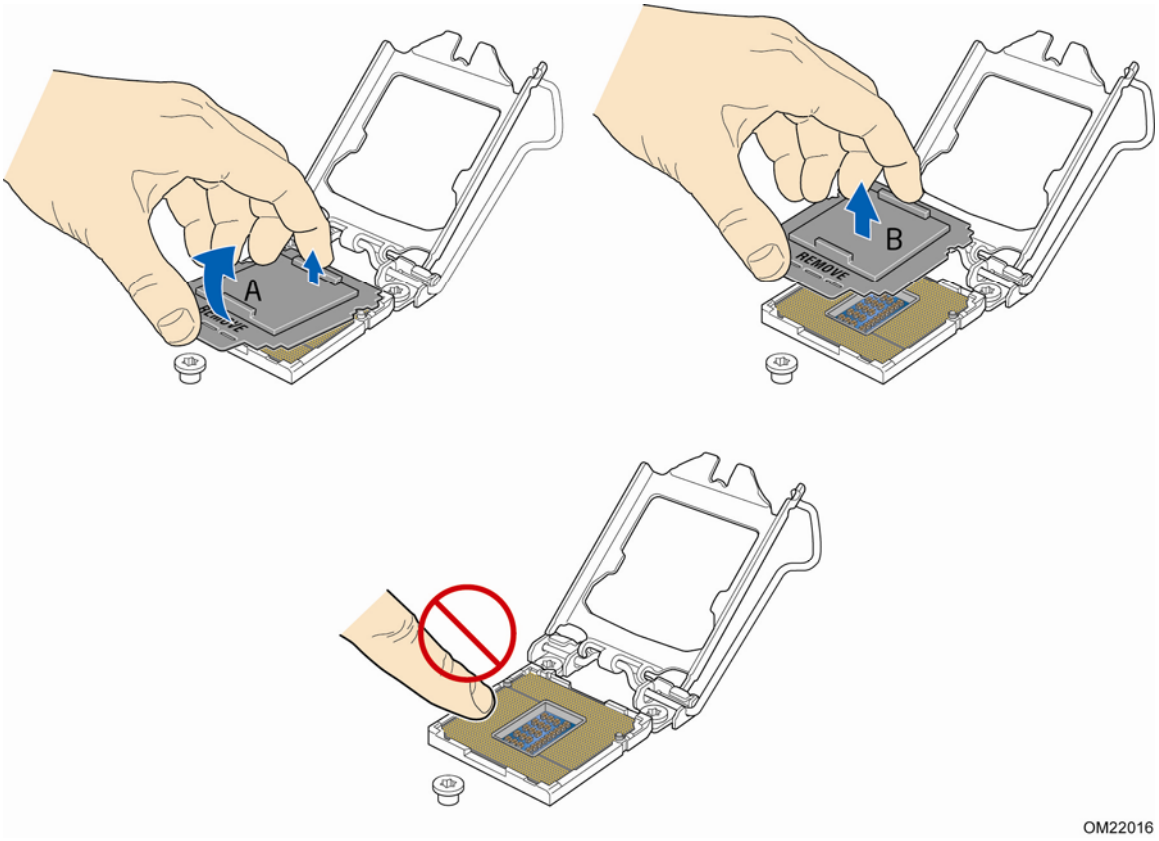


Figure 8. Remove the Socket Cover

5. Remove the processor from its protective cover. Hold the processor only at the edges, being careful not to touch the bottom of the processor (see Figure 9).

NOTE

Do not discard the processor cover. Always replace the processor cover if you remove the processor from the socket.

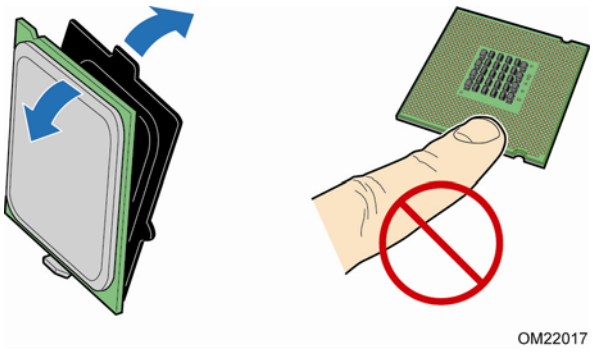


Figure 9. Remove the Processor from the Protective Cover

6. Hold the processor with your thumb and index finger oriented as shown in Figure 10 to align your fingers with the socket finger cutouts. Make sure that the processor Pin 1 indicator (gold triangle) is aligned with the Pin 1 chamfer on the socket (Figure 10, B) and that the notches on the processor align with the posts on the socket (Figure 10, C). Lower the processor straight down without tilting or sliding it in the socket (Figure 10, A).

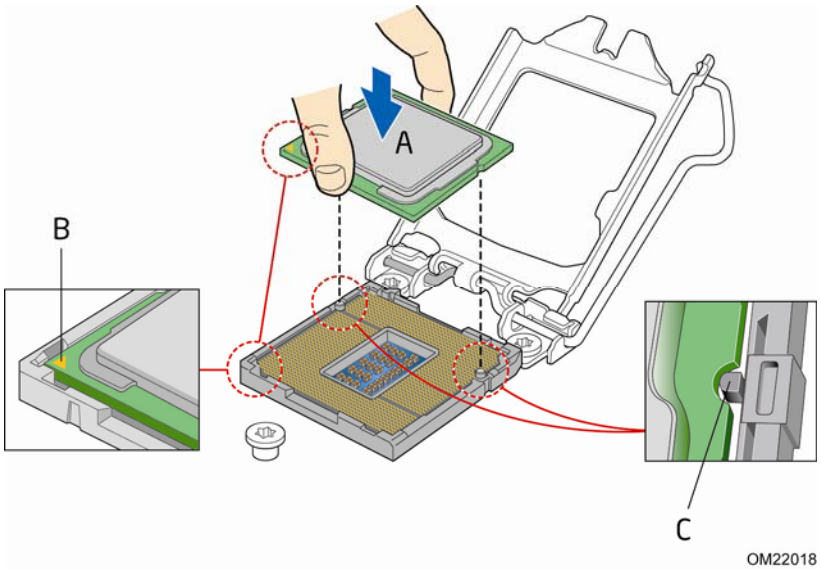


Figure 10. Install the Processor

7. Lower the load plate over the processor while leaving the socket lever in the open position (Figure 11).

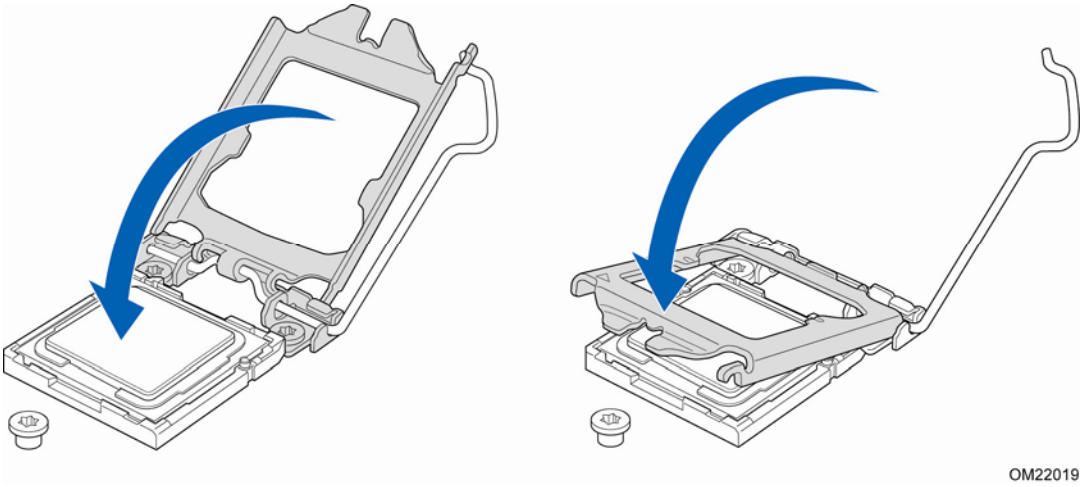


Figure 11. Lower the Load Plate

8. Lower the socket lever (Figure 12, B) while making sure that the front edge of the load plate slides under the shoulder screw cap as the lever is lowered (Figure 12, A). Latch the socket lever under the load plate tab (Figure 12, C, D).

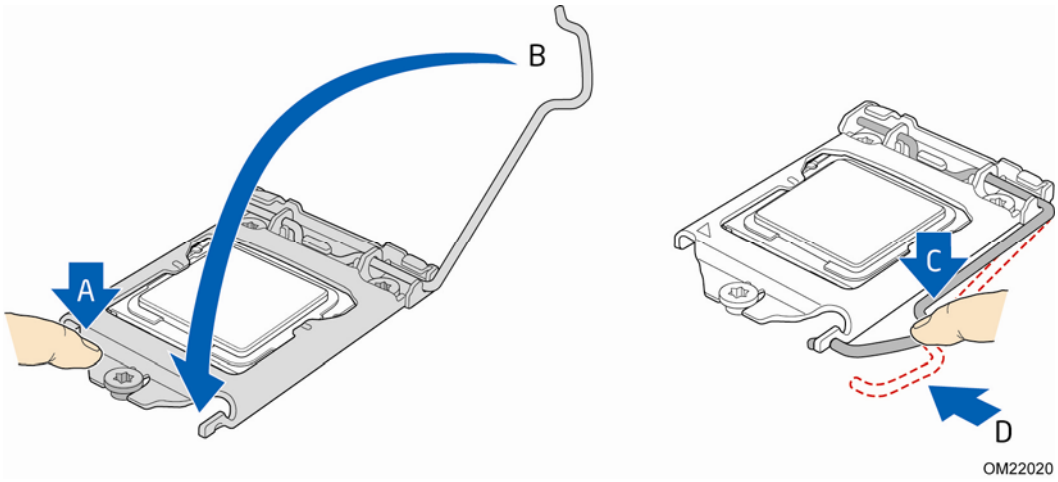


Figure 12. Secure the Load Plate in Place

Installing a Processor Fan Heat Sink

Intel Desktop Board DH57JG has mounting holes for a processor fan heat sink. For instructions on how to attach the processor fan heat sink to the Desktop Board, refer to the boxed processor manual or boxed thermal solution manual.

Connecting the Processor Fan Heat Sink Cable

Connect the processor fan heat sink power cable to the 4-pin processor fan header (see Figure 13). A fan with a 4-pin connector as shown in Figure 13 is recommended.

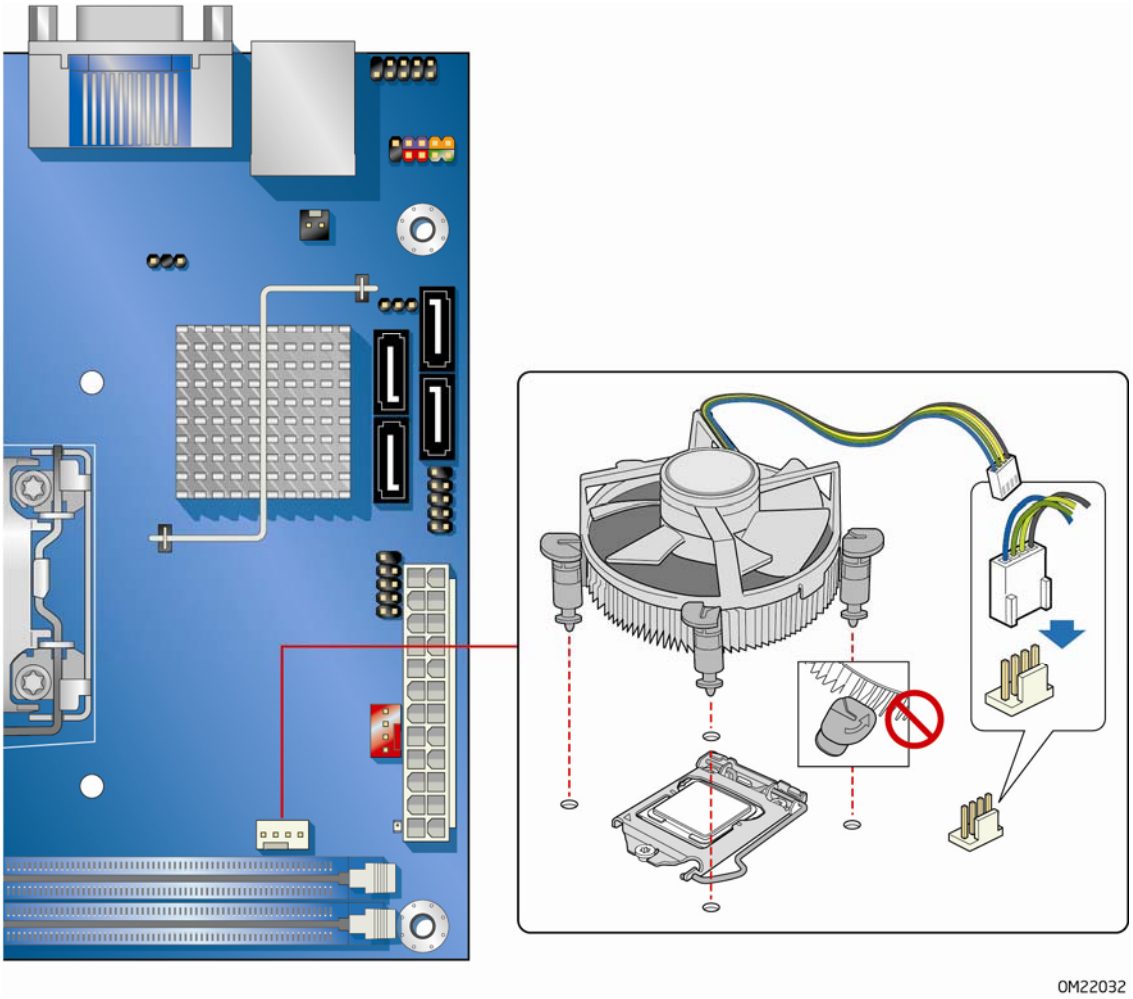


Figure 13. Connecting the Processor Fan Heat Sink Power Cable to the Processor Fan Header

Removing the Processor

For instructions on how to remove the processor fan heat sink and processor, refer to the processor installation manual.

Installing and Removing System Memory

NOTE

To be fully compliant with all applicable Intel SDRAM memory specifications, the board requires DIMMs that support the Serial Presence Detect (SPD) data structure.

The desktop board has two 240-pin DDR3 DIMM sockets providing Channel A and Channel B. For dual-channel performance, install a matched pair of DIMMs equal in speed and size (see Figure 14).

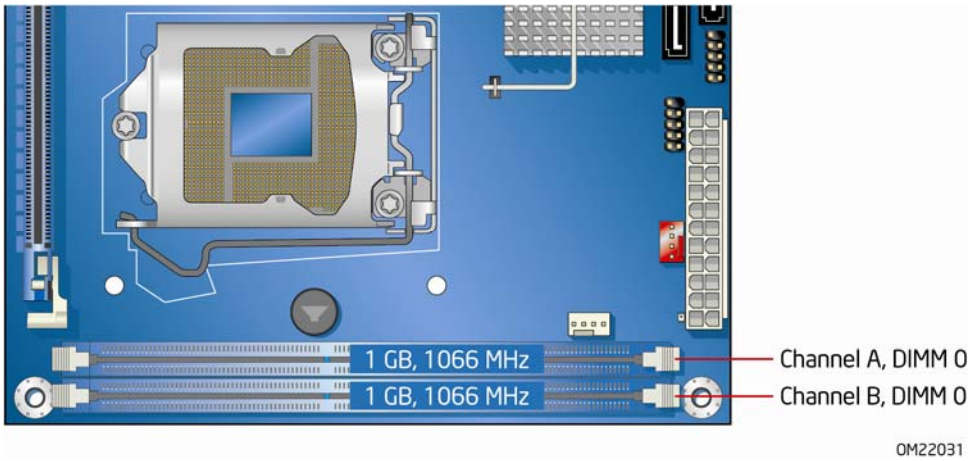


Figure 14. Dual Channel Memory Configuration Example

NOTE

All other memory configurations will result in single-channel memory operation.

Installing DIMMs

To make sure you have the correct DIMM, place it on the illustration of the DDR3 DIMM in Figure 15. All the notches should match with the DDR3 DIMM.

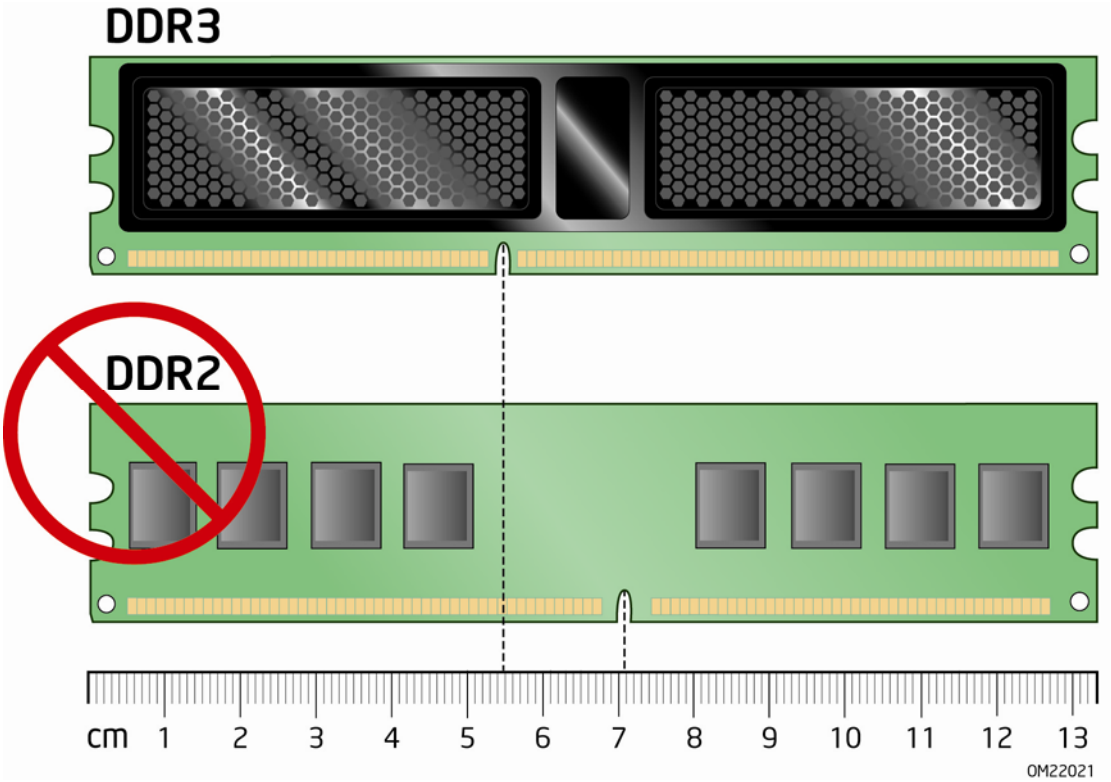


Figure 15. Use DDR3 DIMMs

To install a DIMM, follow these steps:

1. Observe the precautions in "Before You Begin" on page 27.
2. Turn off all peripheral devices connected to the computer. Turn off the computer and disconnect the AC power cord.
3. Remove the computer's cover and locate the DIMM sockets (see Figure 16).
4. If a full length PCI Express graphics card is installed in the PCI Express x16 connector, remove the card to gain full access to the DIMM sockets.

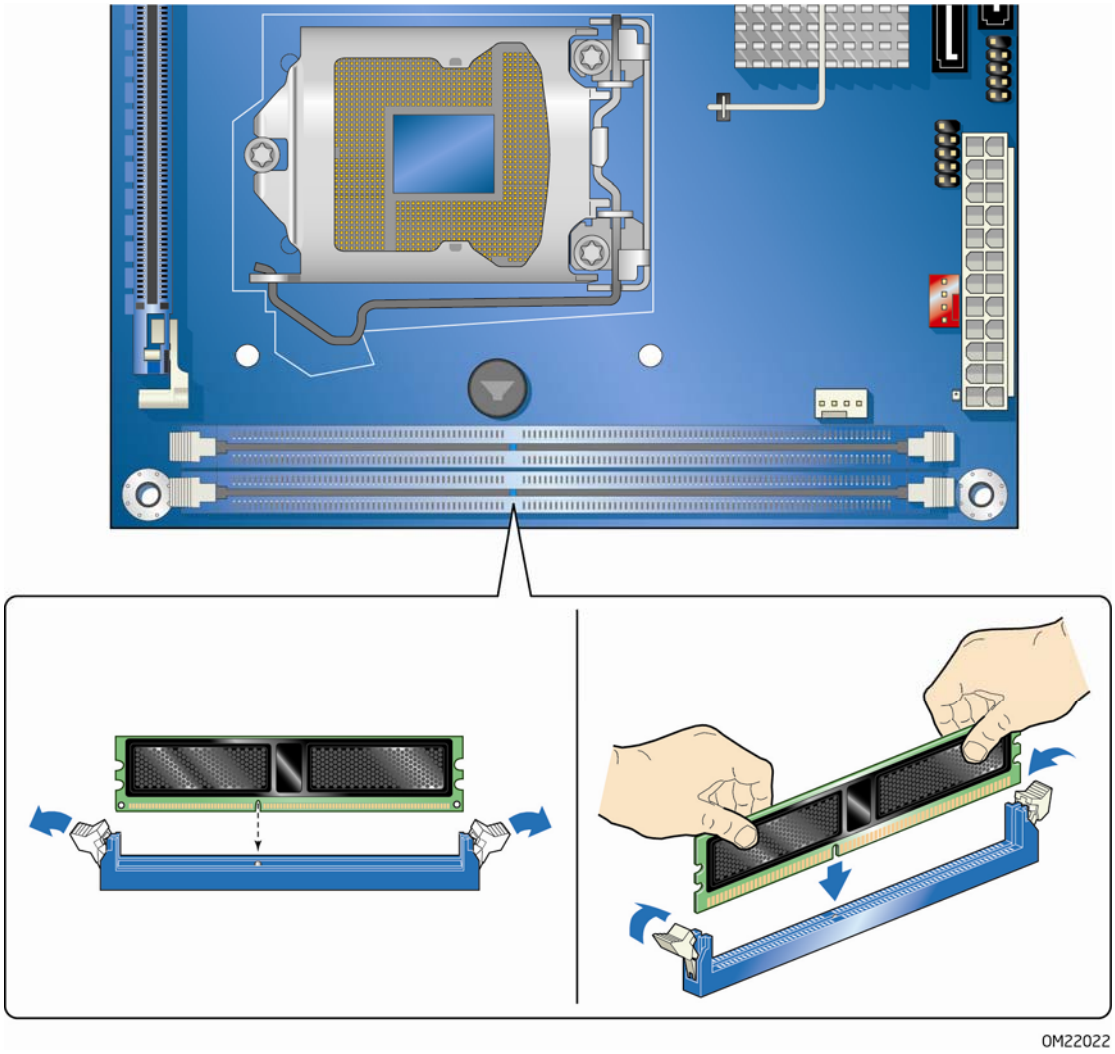


Figure 16. Installing a DIMM

5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the keys in the socket (see inset in Figure 16).
8. Insert the bottom edge of the DIMM into the socket.

9. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
10. Reinstall the PCI Express graphics card if one was removed in Step 4.
11. Replace the computer's cover and reconnect the AC power cord.

Removing DIMMs

To remove a DIMM, follow these steps:

1. Observe the precautions in "Before You Begin" on page 27.
2. Turn off all peripheral devices connected to the computer. Turn off the computer.
3. Remove the AC power cord from the computer.
4. Remove the computer's cover.
5. If a full length PCI Express graphics card is installed in the PCI Express x16 connector, remove the card to gain access to the DIMMs.
6. Gently spread the retaining clips at each end of the DIMM socket. The DIMM pops out of the socket.
7. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
8. Reinstall the PCI Express graphics card if one was removed in Step 5 and reconnect any other parts you removed or disconnected to reach the DIMMs.
9. Replace the computer's cover and reconnect the AC power cord.

Installing and Removing PCI Express x16 Graphics Cards

Installing a PCI Express x16 Graphics Card

CAUTION

Before installing a PCI Express x16 graphics card, make sure that the tabs on the DIMM sockets are in the upright position (closed); otherwise, they may be damaged by the PCI Express card during installation.

CAUTION

When installing a PCI Express card, ensure that the card is fully seated in the PCI Express connector before you power on the system. If the card is not fully seated in the connector, an electrical short may result across the connector pins. Depending on the over-current protection of the power supply, certain Desktop Board components and/or traces may be damaged.

Follow these instructions to install a PCI Express x16 graphics card:

1. Observe the precautions in "Before You Begin" on page 27.
2. Place the card in the PCI Express x16 connector (Figure 17, A) and press down on the card until it is completely seated in the connector and the card retention notch on the card snaps into place around the retention mechanism pin on the connector.
3. Secure the card's metal bracket to the chassis back panel with a screw (Figure 17, B).
4. Connect a monitor to the graphics card according to the manufacturer's instructions.

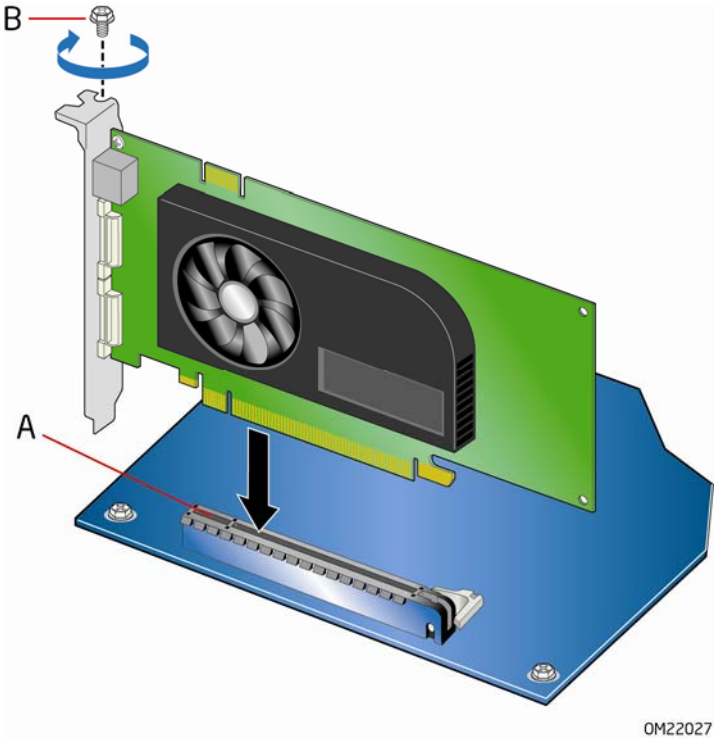


Figure 17. Installing a PCI Express x16 Graphics Card

Removing a PCI Express x16 Graphics Card

Follow these instructions to remove a PCI Express x16 graphics card from a connector:

1. Observe the precautions in "Before You Begin" on page 27.
2. Disconnect the monitor cable from the graphics card back panel connector.
3. Remove the screw (Figure 18, A) that secures the card's metal bracket to the chassis back panel.
4. Push the card ejector lever down using the tip of a pencil or similar tool (Figure 18, B) in the notch. This will release the card from the connector (C).
5. Pull the card straight up to remove it.

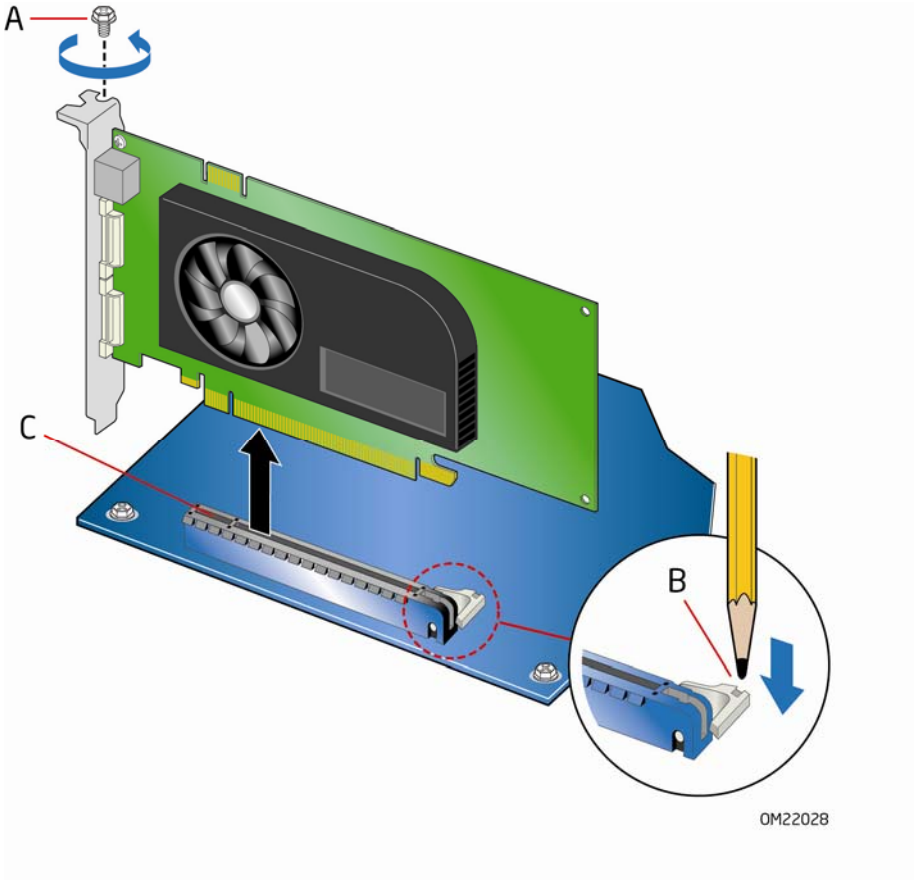


Figure 18. Removing a PCI Express x16 Graphics Card

Connecting Serial ATA (SATA) Cables

SATA cables support the Serial ATA protocol. Each cable can be used to connect one internal SATA drive to the Desktop Board. For correct cable function:

1. Observe the precautions in "Before You Begin" on page 27.
2. Attach one end of the SATA cable to one of the SATA connectors on the board (Figure 19, A) and attach the other end of the cable to the SATA drive (Figure 19, B).

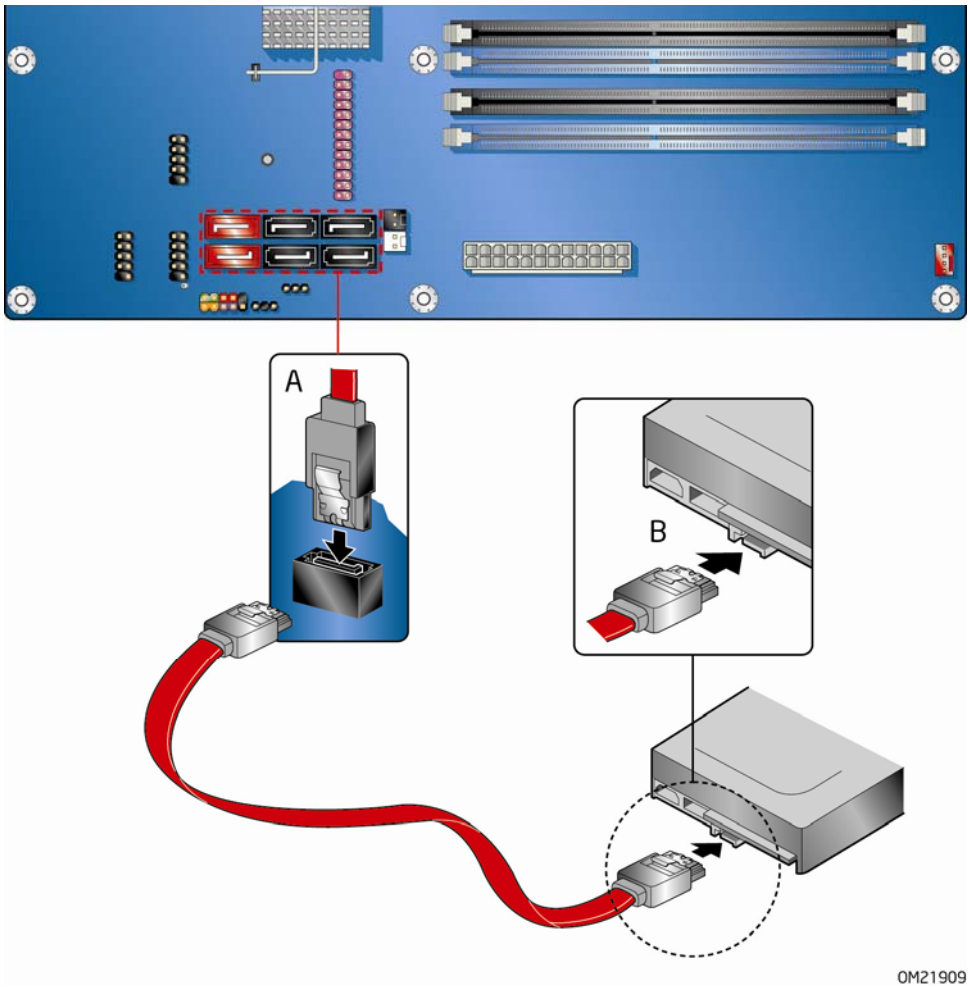


Figure 19. Connecting a Serial ATA Cable

Connecting to the Internal Headers

Before connecting cables to any of the internal headers, observe the precautions in "Before You Begin" on page 27. Figure 20 shows the location of the internal headers and connectors on Intel Desktop Board DH57JG.

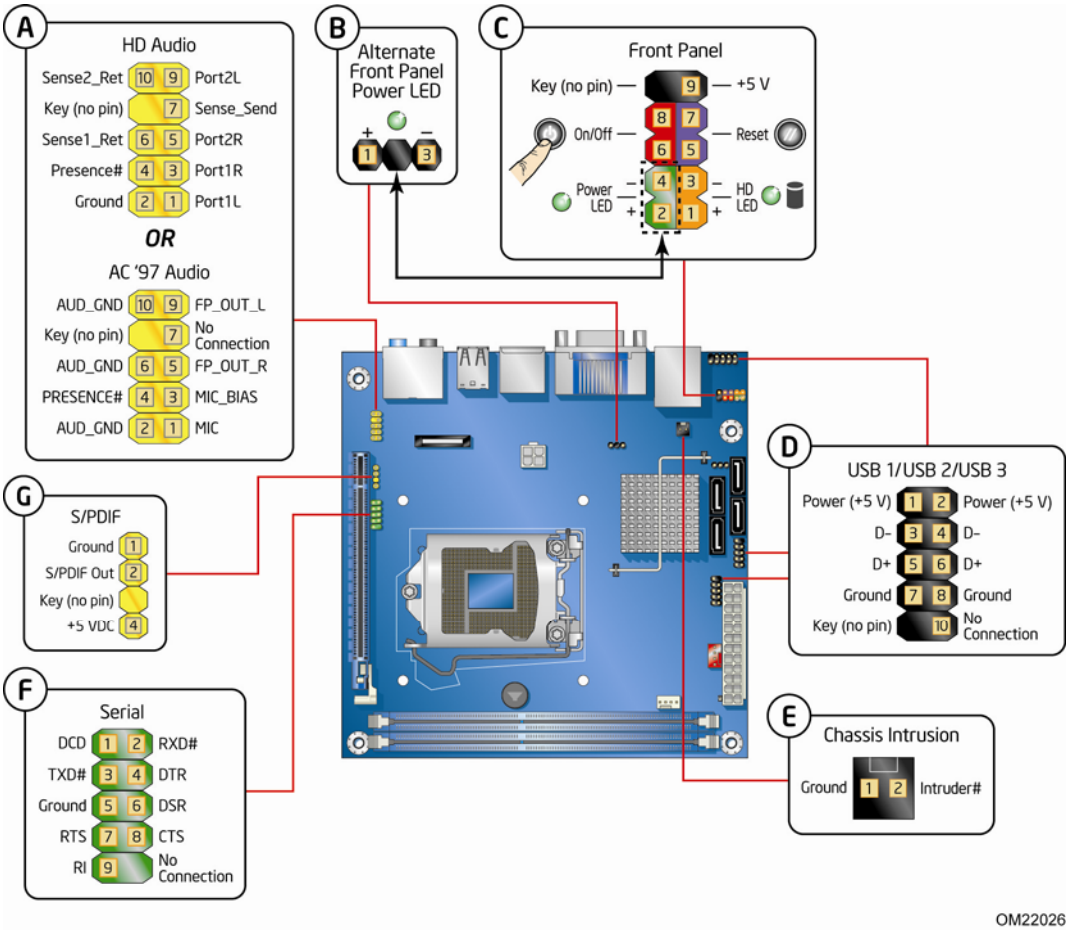


Figure 20. Internal Headers

Front Panel Audio Header

The front panel audio header shown in Figure 20, A supports both Intel High Definition (HD) Audio and AC '97 Audio.

Table 7 shows the pin assignments and signal names for HD Audio and Table 8 shows the pin assignments and signal names for AC '97 Audio.

Table 7. Front Panel Audio Signal Names for Intel HD Audio

Pin	Signal Name	Pin	Signal Name
1	PORT 1L (Microphone)	2	GND
3	PORT 1R (Microphone)	4	PRESENCE#
5	PORT 2R (Headphone)	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY (no pin)
9	PORT 2L (Headphone)	10	SENSE2_RETURN

Table 8. Front Panel Audio Header Signal Names for AC '97 Audio

Pin	Signal Name	Pin	Signal Name
1	MIC	2	AUD_GND
3	MIC_BIAS	4	PRESENCE#
5	FP_OUT_R	6	AUD_GND
7	No connect	8	KEY (no pin)
9	FP_OUT_L	10	AUD_GND

Alternate Front Panel Power LED Header

Figure 20, B shows the location of the alternate front panel power LED header. Pins 1 and 3 of this header duplicate the signals on pins 2 and 4 of the front panel header. If your chassis has a three-pin power LED cable, connect it to this header. Table 9 shows the pin assignments for the alternate front panel header.

Table 9. Alternate Front Panel Power LED Header Signal Names

Pin	Signal Name	In/Out
1	Front panel LED+	Out
2	No pin	
3	Front panel LED-	Out

Front Panel Header

Figure 20, C shows the location of the front panel header. Table 10 shows the pin assignments and signal names for the front panel header.

Table 10. Front Panel Header Signal Names

Pin	Description	In/Out	Pin	Description	In/Out
Hard Drive Activity LED			**Power LED**		
1	Hard disk LED pull-up to +5 V	Out	2	Front panel LED+	Out
3	Hard disk active LED	Out	4	Front panel LED-	Out
Reset Switch			**On/Off Switch**		
5	Ground		6	Power switch	In
7	Reset switch	In	8	Ground	
Power			**Not Connected**		
9	Power	Out	10	No pin	

NOTE

When connecting individual wires from your chassis front panel to the front panel header, be sure to observe the connection polarity. Positive wires are usually solid color and negative wires are usually white or striped.

Front Panel USB 2.0 Headers

Figure 20, D shows the location of the front panel USB 2.0 headers and Table 11 shows its pin assignments and signal names.

Table 11. USB 2.0 Header Signal Names

Pin	Signal Name	Pin	Signal Name
1	Power (+5 V)	2	Power (+5 V)
3	D-	4	D-
5	D+	6	D+
7	Ground	8	Ground
9	Key	10	No Connection

NOTE

Computer systems that have an unshielded cable attached to a USB port might not meet FCC Class B requirements, even if no device or a low-speed USB device is attached to the cable. Use a shielded cable that meets the requirements for a full-speed USB device.

Chassis Intrusion Header

Figure 20, E shows the location of the chassis intrusion header. This header can be connected to a mechanical switch on the chassis to detect if the chassis cover is removed. This switch should be in the open position when the chassis cover is installed and closed when the cover is removed.

Table 12 shows the pin assignments and signal names for the chassis intrusion header.

Table 12. Chassis Intrusion Header Signal Names

Pin	Description
1	Intruder#
2	Ground

Serial Header

Figure 20, F shows the location of the serial header. Table 13 shows the pin assignments and signal names for the serial header.

Table 13. Serial Port Header

Pin	Signal Name	Pin	Signal Name
1	DCD (Data Carrier Detect)	2	RXD# (Receive Data)
3	TXD# (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	Key (no pin)

S/PDIF Header

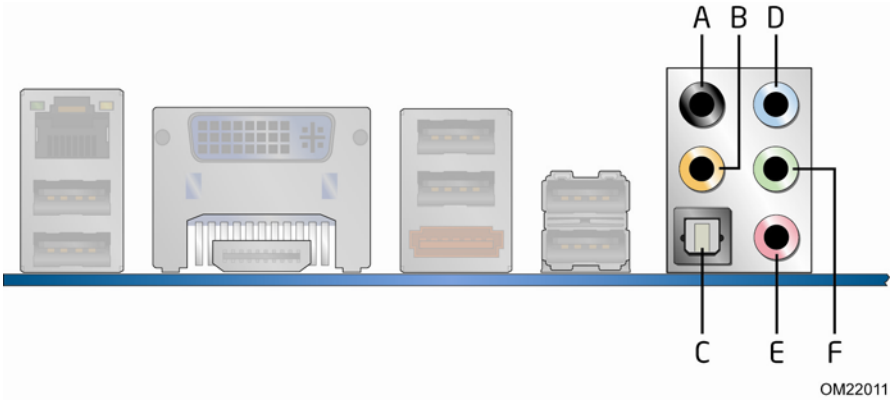
Figure 20, G shows the location of the S/PDIF output header. Table 14 shows the pin assignments and signal names for the S/PDIF output header.

Table 14. S/PDIF Header Signal Names

Pin	Description
1	Ground
2	S/PDIF Out
3	Key (no pin)
4	+5 VDC

Connecting to the Audio System

After installing the Realtek audio driver from the Intel® Express Installer DVD-ROM, the multi-channel audio feature can be enabled. Figure 21 shows the back panel audio connectors. The default connector assignments are shown in the table.



Item	Description
A	Rear surround
B	Center channel and LFE (subwoofer)
C	S/PDIF out optical
D	Audio line in
E	Mic in/side surround
F	Line out/front speakers

Figure 21. Back Panel Audio Connectors

NOTE

The back panel line out connector is designed to power either headphones or amplified speakers only. Poor audio quality may occur if passive (non-amplified) speakers are connected to this output.

Connecting Chassis Fan and Power Supply Cables

Connecting a Chassis Fan

Connect the chassis fan cable to the chassis fan header on the Desktop Board. Figure 22 shows the location of the chassis fan header.

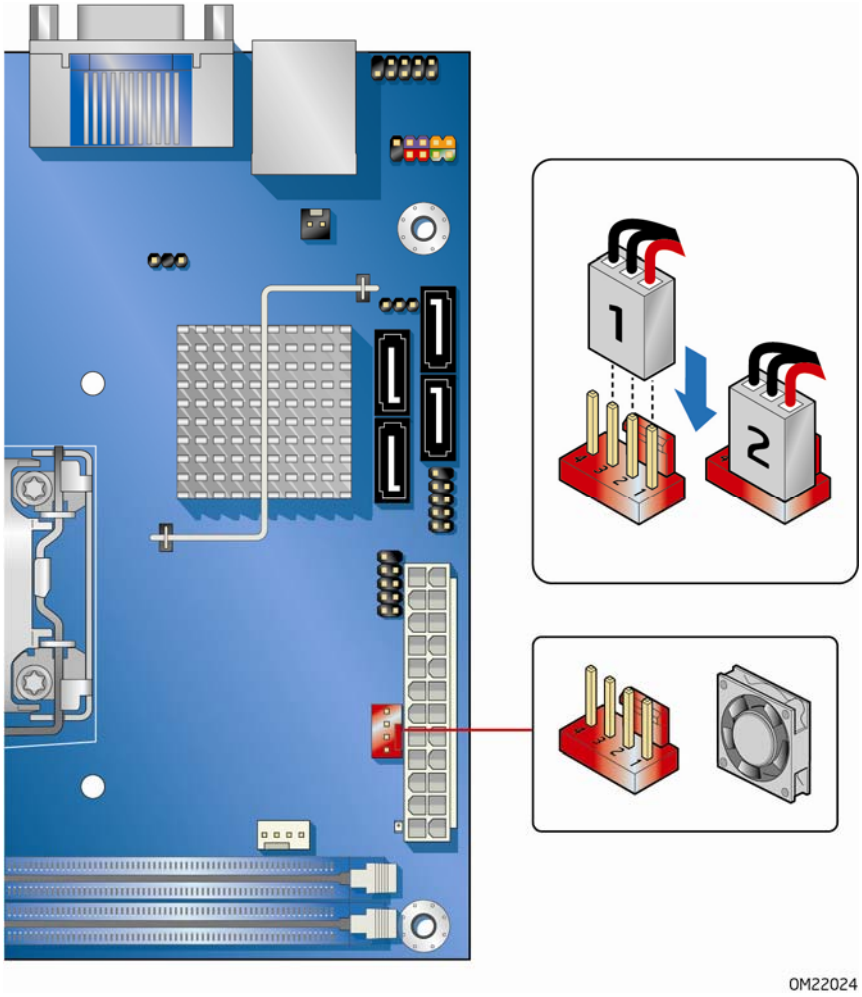


Figure 22. Location of the Chassis Fan Header

Connecting Power Supply Cables

CAUTION

Failure to use an appropriate power supply and/or not connecting the 12 V power connector (Figure 23, A) to the Desktop Board may result in damage to the board or the system may not function properly.

Figure 23 shows the location of the power connectors. The 2 x 12 pin main power connector (Figure 23, B) is backwards compatible with ATX12V power supplies with 2 x 10 connectors.

NOTE

If your power supply has a 2 x 10 main power connector, it is recommended that you do not install a PCI Express x16 graphics card unless it has a direct connection to the power supply.

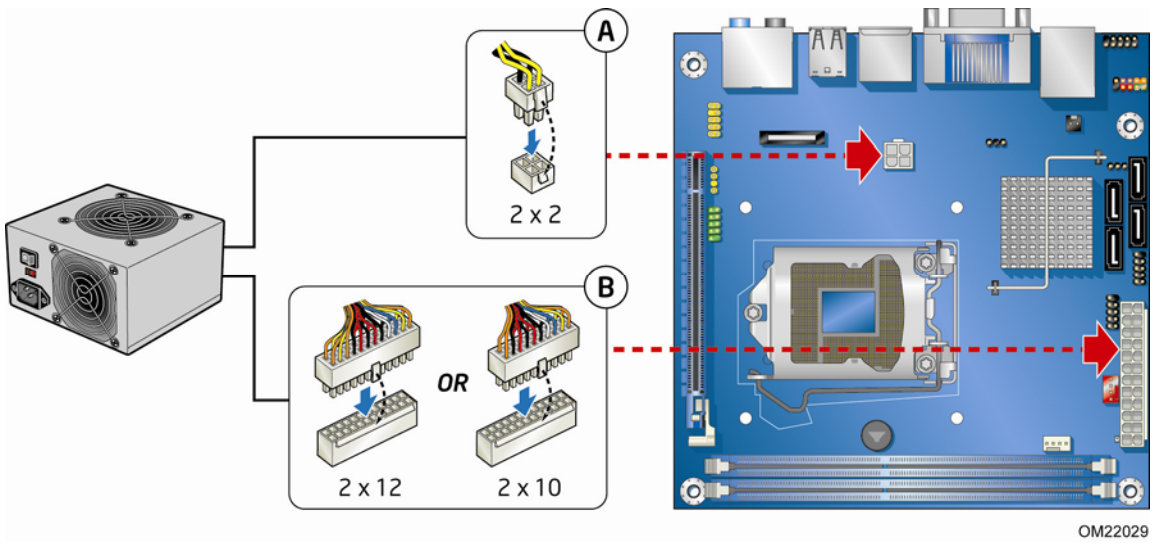


Figure 23. Connecting Power Supply Cables

1. Observe the precautions in "Before You Begin" on page 27.
2. Connect the 12 V processor core voltage power supply cable to the 2 x 2 pin connector (Figure 23, A).
3. Connect the main power supply cable to the 2 x 12 pin connector (Figure 23, B).

Setting the BIOS Configuration Jumper

NOTE

Always turn off the power and unplug the power cord from the computer before moving the jumper. Moving the jumper with the power on may result in unreliable computer operation.

Figure 24 shows the location of the Desktop Board's BIOS configuration jumper block.

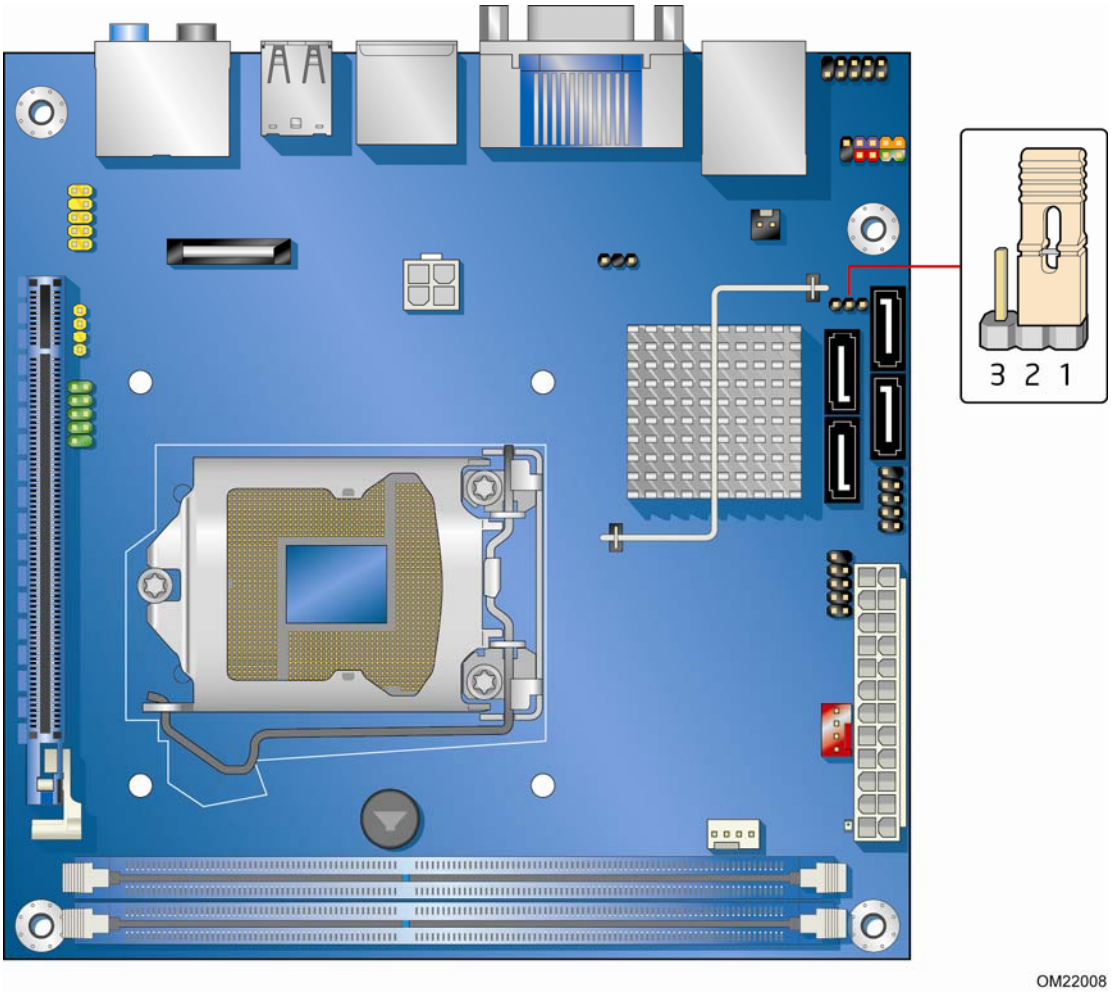
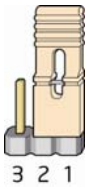
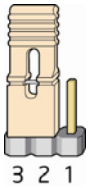
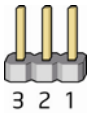


Figure 24. Location of the BIOS Configuration Jumper Block

The three-pin BIOS jumper block enables board configuration to be done in the BIOS Setup program. Table 15 shows the jumper settings for the BIOS Setup program modes.

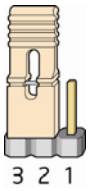
Table 15. Jumper Settings for the BIOS Setup Program Modes

Jumper Setting	Mode	Description
	Normal (default) (1-2)	The BIOS uses the current configuration and passwords for booting.
	Configure (2-3)	After the Power-On Self-Test (POST) runs, the BIOS displays the Maintenance Menu. Use this menu to clear passwords.
	Recovery (None)	The BIOS recovers data in the event of a failed BIOS update.

Clearing Passwords

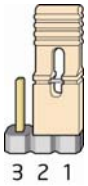
This procedure assumes that the board is installed in the computer and the configuration jumper block is set to normal mode.

1. Observe the precautions in "Before You Begin" on page 27.
2. Turn off all peripheral devices connected to the computer. Turn off the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
3. Remove the computer cover.
4. Find the configuration jumper block (see Figure 24).
5. Place the jumper on pins 2-3 as shown below.



6. Replace the cover, plug in the computer, turn on the computer, and allow it to boot.
7. The computer starts the Setup program. Setup displays the Maintenance menu.

8. Use the arrow keys to select Clear Passwords. Press <Enter> and Setup displays a pop-up screen requesting that you confirm clearing the password. Select Yes and press <Enter>. Setup displays the maintenance menu again.
9. Press <F10> to save the current values and exit Setup.
10. Turn off the computer. Disconnect the computer's power cord from the AC power source.
11. Remove the computer cover.
12. To restore normal operation, place the jumper on pins 1-2 as shown below.



13. Replace the cover, plug in the computer, and turn on the computer.

Replacing the Battery

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery. The clock is accurate to ± 13 minutes/year at 25 ºC with 3.3 VSB applied.

When the voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one. Figure 25 on page 58 shows the location of the battery.

CAUTION

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

PRÉCAUTION

Risque d'explosion si la pile usagée est remplacée par une pile de type incorrect. Les piles usagées doivent être recyclées dans la mesure du possible. La mise au rebut des piles usagées doit respecter les réglementations locales en vigueur en matière de protection de l'environnement.

FORHOLDSREGEL

Eksplosionsfare, hvis batteriet erstattes med et batteri af en forkert type. Batterier bør om muligt genbruges. Bortskaffelse af brugte batterier bør foregå i overensstemmelse med gældende miljølovgivning.

OBS!

Det kan oppstå eksplosjonsfare hvis batteriet skiftes ut med feil type. Brukte batterier bør kastes i henhold til gjeldende miljølovgivning.

VIKTIGT!

Risk för explosion om batteriet ersätts med felaktig batterityp. Batterier ska kasseras enligt de lokala miljövårdsbestämmelserna.

VARO

Räjähdysvaara, jos pariston tyyppi on väärä. Paristot on kierrätettävä, jos se on mahdollista. Käytetyt paristot on hävitettävä paikallisten ympäristömääräysten mukaisesti.

VORSICHT

Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.

AVVERTIMENTO

Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.

PRECAUCIÓN

Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.

WAARSCHUWING

Er bestaat ontploffingsgevaar als de batterij wordt vervangen door een onjuist type batterij. Batterijen moeten zoveel mogelijk worden gerecycled. Houd u bij het weggooien van gebruikte batterijen aan de plaatselijke milieuwetgeving.

ATENÇÃO

Haverá risco de explosão se a bateria for substituída por um tipo de bateria incorreto. As baterias devem ser recicladas nos locais apropriados. A eliminação de baterias usadas deve ser feita de acordo com as regulamentações ambientais da região.

AŚCIAROŽZNAŚĆ

Існуе рызыка выбуху, калі заменены акумулятар неправільнага тыпу. Акумулятары павінны, па магчымасці, перапрацоўвацца. Пазбаўляцца ад старых акумулятараў патрэбна згодна з мясцовым заканадаўствам па экалогіі.

UPOZORNÌNÍ

V případě výměny baterie za nesprávný druh může dojít k výbuchu. Je-li to možné, baterie by měly být recyklovány. Baterie je třeba zlikvidovat v souladu s místními předpisy o životním prostředí.

Προσοχή

Υπάρχει κίνδυνος για έκρηξη σε περίπτωση που η μπαταρία αντικατασταθεί από μία λανθασμένου τύπου. Οι μπαταρίες θα πρέπει να ανακυκλώνονται όταν κάτι τέτοιο είναι δυνατό. Η απόρριψη των χρησιμοποιημένων μπαταριών πρέπει να γίνεται σύμφωνα με τους κατά τόπο περιβαλλοντικούς κανονισμούς.

VIGYÁZAT

Ha a telepet nem a megfelelő típusú telepre cseréli, az felrobbanhat. A telepeket lehetőség szerint újra kell hasznosítani. A használt telepeket a helyi környezetvédelmi előírásoknak megfelelően kell kiselejtezni.

注意

異なる種類の電池を使用すると、爆発の危険があります。リサイクル
が可能な地域であれば、電池をリサイクルしてください。使用後の電
池を破棄する際には、地域の環境規制に従ってください。

AWAS

Risiko letupan wujud jika bateri digantikan dengan jenis yang tidak betul. Bateri sepatutnya dikitar semula jika boleh. Pelupusan bateri terpakai mestilah mematuhi peraturan alam sekitar tempatan.

OSTRZEŻENIE

Istnieje niebezpieczeństwo wybuchu w przypadku zastosowania niewłaściwego typu baterii. Zużyte baterie należy w miarę możliwości utylizować zgodnie z odpowiednimi przepisami ochrony środowiska.

PRECAUŢIE

Risc de explozie, dacă bateria este înlocuită cu un tip de baterie necorespunzător. Bateriile trebuie reciclate, dacă este posibil. Depozitarea bateriilor uzate trebuie să respecte reglementările locale privind protecţia mediului.

ВНИМАНИЕ

При использовании батареи несоответствующего типа существует риск ее взрыва. Батареи должны быть утилизированы по возможности. Утилизация батарей должна проводится по правилам, соответствующим местным требованиям.

UPOZORNENIE

Ak batériu vymeníte za nesprávny typ, hrozí nebezpečenstvo jej výbuchu. Batérie by sa mali podľa možnosti vždy recyklovať. Likvidácia použitých batérií sa musí vykonávať v súlade s miestnymi predpismi na ochranu životného prostredia.

POZOR

Zamenjava baterije z baterijo drugačnega tipa lahko povzroči eksplozijo.
Če je mogoče, baterije reciklirajte. Rabljene baterije zavrzite v skladu z lokalnimi okoljevarstvenimi predpisi.

คำเตือน

ระวังการระเบิดที่เกิดจากเปลี่ยนแบตเตอรี่ผิดประเภท หากเป็นไปได้ ควรนำแบตเตอรี่ไปรีไซเคิล การทิ้งแบตเตอรี่ใช้แล้วต้องเป็นไปตามกฎข้อบังคับด้านสิ่งแวดล้อมของท้องถิ่น.

UYARI

Yanlış türde pil takıldığında patlama riski vardır. Piller mümkün olduğunda geri dönüştürülmelidir. Kullanılmış piller, yerel çevre yasalarına uygun olarak atılmalıdır.

ОСТОРОГА

Використовуйте батареї правильного типу, інакше існуватиме ризик вибуху. Якщо можливо, використані батареї слід утилізувати. Утилізація використаних батарей має бути виконана згідно місцевих норм, що регулюють охорону довкілля.

UPOZORNĚNÍ

V případě výměny baterie za nesprávný druh může dojít k výbuchu. Je-li to možné, baterie by měly být recyklovány. Baterie je třeba zlikvidovat v souladu s místními předpisy o životním prostředí.

ETTEVAATUST

Kui patarei asendatakse uue ebasobivat tüüpi patareiga, võib tekkida plahvatusoht. Tühjad patareid tuleb võimaluse korral viia vastavasse kogumispunkti. Tühjade patareide äraviskamisel tuleb järgida kohalikke keskkonnakaitse alaseid reegleid.

FIGYELMEZTETÉS

Ha az elemet nem a megfelelő típusúra cseréli, felrobbanhat. Az elemeket lehetőség szerint újra kell hasznosítani. A használt elemeket a helyi környezetvédelmi előírásoknak megfelelően kell kiselejtezni.

UZMANĪBU

Pastāv eksplozijas risks, ja baterijas tiek nomainītas ar nepareiza veida baterijām. Ja iespējams, baterijas vajadzētu nodot attiecīgos pieņemšanas punktos. Bateriju izmešanai atkritumos jānotiek saskaņā ar vietējiem vides aizsardzības noteikumiem.

DĖMESIO

Naudojant netinkamo tipo baterijas įrenginys gali sprogti. Kai tik įmanoma, baterijas reikia naudoti pakartotinai. Panaudotas baterijas išmesti būtina pagal vietinius aplinkos apsaugos nuostatus.

ATTENZJONI

Riskju ta' splużjoni jekk il-batterija tinbidel b'tip ta' batterija mhux korrett. Il-batteriji għandhom jiġu riċiklati fejn hu possibbli. Ir-rimi ta' batteriji użati għandu jsir skond ir-regolamenti ambjentali lokali.

OSTRZEŻENIE

Ryzyko wybuchu w przypadku wymiany na baterie niewłaściwego typu. W miarę możliwości baterie należy poddać recyklingowi. Zużytych baterii należy pozbywać się zgodnie z lokalnie obowiązującymi przepisami w zakresie ochrony środowiska.

To replace the battery, follow these steps:

1. Observe the precautions in "Before You Begin" (see page 27).
2. Turn off all peripheral devices connected to the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
3. Remove the computer cover.
4. Locate the battery on the board (see Figure 25).
5. Push the battery to the side and lift it up as shown in the figure to remove it from the connector. Note the orientation of the "+" and "-" on the battery.
6. Install the new battery in the connector, orienting the "+" and "-" correctly.
7. Replace the computer cover.

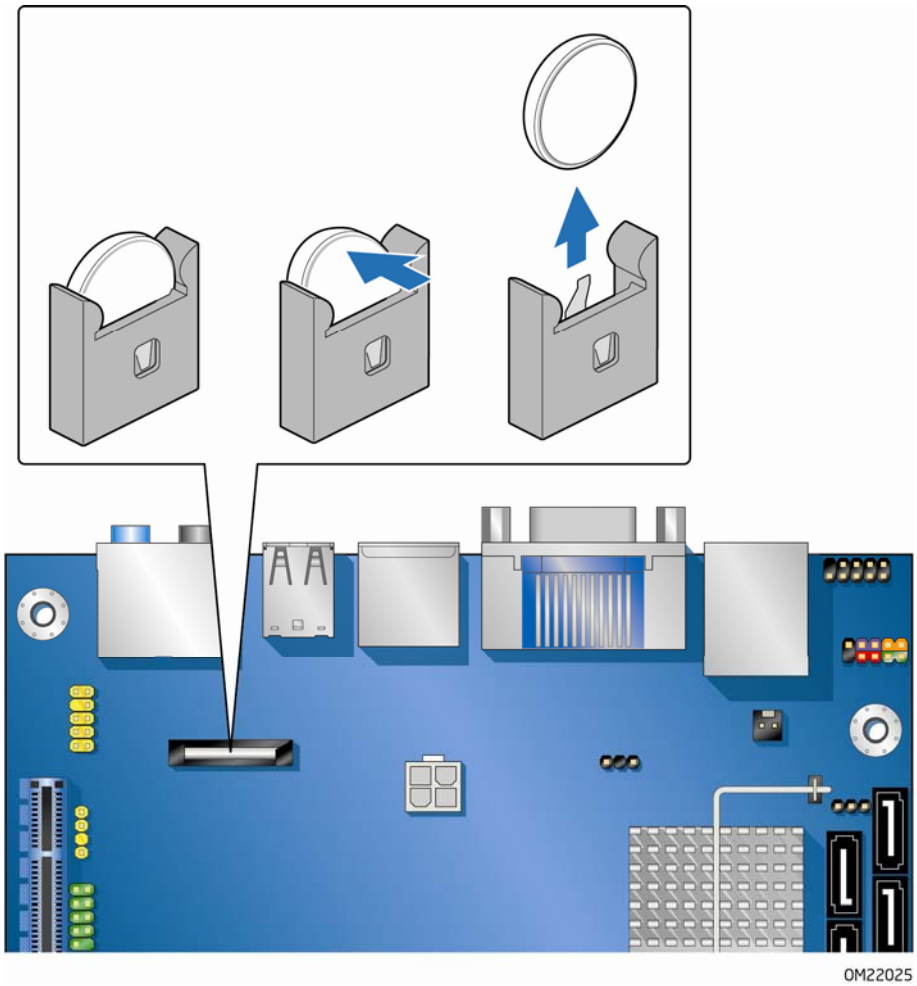


Figure 25. Removing the Battery

3 Updating the BIOS

The BIOS Setup program can be used to view and change the BIOS settings for the computer. You can access the BIOS Setup program by pressing the <F2> key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins.

This chapter tells you how to update the BIOS by either using the Intel Express BIOS Update utility or the Iflash Memory Update utility, and how to recover the BIOS if an update fails.

Updating the BIOS with the Intel® Express BIOS Update Utility

With the Intel Express BIOS Update utility you can update the system BIOS while in the Windows environment. The BIOS file is included in an automated update utility that combines the functionality of the Intel® Flash Memory Update Utility and the ease of use of Windows-based installation wizards.

To update the BIOS with the Intel Express BIOS Update utility:

1. Go to the Intel World Wide Web site: http://support.intel.com/support/motherboards/desktop/
2. Navigate to the DH57JG page, click "Latest BIOS and driver updates," select "BIOS Update [JGIBX10H.86A]," and download the Express BIOS Update utility file.
3. Download the file to your hard drive. (You can also save this file to a removable USB device. This is useful if you are updating the BIOS for multiple identical systems.)
4. Close all other applications. This step is required. Your system will be rebooted at the last Express BIOS Update window.
5. Double-click the executable file from the location on your hard drive where it was saved. This runs the update program.
6. Follow the instructions provided in the dialog boxes to complete the BIOS update.

Updating the BIOS with the ISO Image BIOS Update File or the Iflash Memory Update Utility

You can use the information in this section to update the BIOS using either the Iflash Memory Update Utility or the ISO Image BIOS update file.

Obtaining the BIOS Update File

You can update to a new version of the BIOS by using the ISO Image BIOS update file (recommended), or Iflash BIOS update file.

The ISO Image BIOS update file is a standardized image of a bootable CD-ROM that can be used to create a bootable CD that will update the BIOS.

The Iflash BIOS update file is a compressed file that contains the files you need to update the BIOS. The Iflash BIOS update file contains:

- New BIOS file (including the Intel® Management Engine Firmware Image)
- Intel® Integrator Toolkit Configuration File (optional)
- Intel Flash Memory Update Utility

You can obtain either of these files through your computer supplier or by navigating to the Intel Desktop Board DH57JG page on the Intel World Wide Web site at:

http://support.intel.com/support/motherboards/desktop

Navigate to the DH57JG page, click "Latest BIOS and driver updates," select "BIOS Update [JGIBX10J.86A]," and download the ISO Image BIOS Update or Iflash BIOS Update utility file.

Updating the BIOS with the ISO Image BIOS Update File

The ISO Image BIOS update allows for the update of an Intel® Desktop Board BIOS to the latest production release regardless of the operating system installed on the computer's hard drive and without the need to remove the BIOS configuration jumper. It requires a blank CD-R, a read/writeable CD drive, and software capable of uncompressing and writing the ISO image file to CD.

The image is bootable and automatically launches a script to update the BIOS via the Iflash utility.

CAUTION

Do not interrupt the process or the system may not function properly.

Follow these instructions to upgrade the BIOS using the ISO Image BIOS file:

1. Download the ISO Image BIOS file.
2. Using software capable of writing an ISO image file to CD, burn the data to a blank CD.

NOTE

Copying the ISO Image BIOS file to CD will not work. The completed CD should contain multiple files and a directory.

3. Insert the CD that was created in the CD-ROM drive of the computer to be upgraded and boot the system.
4. When the "Press ENTER to continue booting from CD-ROM" prompt appears, press the Enter key. The system will boot from the hard drive if no key is pressed within 15 seconds.
5. At the "Welcome to the Intel Desktop Board BIOS Upgrade CD-ROM" page, press any key to confirm the BIOS upgrade operation.
6. Wait for the BIOS upgrade process to complete.

CAUTION

DO NOT POWER DOWN YOUR COMPUTER before the update is complete. The update may take up to 5 minutes.

Updating the BIOS with the Iflash Memory Update Utility

With the Iflash Memory update utility you can update the system BIOS from a bootable CD-ROM, bootable USB flash drive, or other bootable USB media. The utility available on the Intel World Wide Web site provides a simple method for creating a bootable CD-ROM that will automatically update your BIOS. The Iflash BIOS update files can also be extracted locally to your hard drive and copied to a bootable USB flash drive or other bootable USB media.

The Iflash Memory update utility allows you to update the BIOS and Intel Management Engine in flash memory.

NOTE

Review the instructions distributed with the update utility before attempting a BIOS update.

CAUTION

Do not interrupt the process or the system may not function properly.

1. Uncompress the BIOS update file and copy the .BIO file, IFLASH.EXE, and .ITK file (optional) to a bootable USB flash drive or other bootable USB media.
2. Configure the BIOS or use the F10 option during POST to boot to the USB device.
3. Manually run the IFLASH.EXE file from the USB device and manually update the BIOS.

Recovering the BIOS

It is unlikely that anything will interrupt the BIOS update; however, if an interruption occurs, the BIOS could be damaged. Due to BIOS size and recovery requirements, a CD-R with the .BIO file in the root directory will be required.

For more information about updating the Intel Desktop Board BIOS or recovering from a BIOS update failure, go to
http://support.intel.com/support/motherboards/desktop/sb/CS-022312.htm

A Error Messages and Indicators

Intel Desktop Board DH57JG reports POST errors in two ways:

- By sounding a beep code and blinking the front panel power LED
- By displaying an error message on the monitor

BIOS Error Codes

Whenever a recoverable error occurs during POST, the BIOS causes the board's speaker to beep and the front panel power LED to blink an error message indicating the problem (see Table 16).

Table 16. BIOS Beep Codes

Type	Pattern	Frequency/Comments
F2 Setup/F10 Boot Menu Prompt	One 0.5 second beep when the BIOS is ready to accept keyboard input	932 Hz
BIOS update in progress	None	
Video error (no add-in graphics card installed)	On-off (1.0 second each) two times, then a 2.5-second pause (off), the entire pattern repeats (beeps and pause) once and the BIOS will continue to boot.	932 Hz For processors requiring an add-in graphics card
Memory error	On-off (1.0 second each) three times, then a 2.5-second pause (off), the entire pattern repeats (beeps and pause) until the system is powered off.	932 Hz
Thermal trip warning	Alternate high and low beeps (1.0 second each) for eight beeps followed by system shut down.	High beep 2000 Hz Low beep 1500 Hz

Table 17. Front-panel Power LED Blink Codes

Type	Pattern	Note
F2 Setup/F10 Boot Menu Prompt	None	
BIOS update in progress	Off when the update begins, then on for 0.5 second, then off for 0.5 second. The pattern repeats until the BIOS update is complete.	
Video error (no add-in graphics card installed)	On-off (0.5 second each) two times, then a 3.0-second pause (off), the entire pattern repeats (blink and pause) until the system is powered off.	For processors requiring an add-in graphics card
Memory error	On-off (0.5 second each) three times, then a 3.0-second pause (off), the entire pattern repeats (blinks and pause) until the system is powered off.	
Thermal trip warning	Each beep will be accompanied by the following blink pattern: .25 seconds on, .25 seconds off, .25 seconds on, .25 seconds off. This results in a total of 32 blinks.	

BIOS Error Messages

When a recoverable error occurs during the POST, the BIOS displays an error message describing the problem. Table 18 gives an explanation of the BIOS error messages.

Table 18. BIOS Error Messages

Error Message	Explanation
CMOS Battery Low	The battery may be losing power. Replace the battery soon.
CMOS Checksum Bad	The CMOS checksum is incorrect. CMOS memory may have been corrupted. Run Setup to reset values.
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.

B Regulatory Compliance

This appendix contains the following regulatory compliance information for Intel Desktop Board DH57JG:

- Safety standards
- European Union Declaration of Conformity statement
- Product Ecology statements
- Electromagnetic Compatibility (EMC) regulations
- Product certifications

Safety Standards

Intel Desktop Board DH57JG complies with the safety standards stated in Table 19 when correctly installed in a compatible host system.

Table 19. Safety Standards

Regulation	Title
CSA/UL 60950-1, First Edition	Information Technology Equipment – Safety - Part 1: General Requirements (USA and Canada)
EN 60950-1:2006, Second Edition	Information Technology Equipment – Safety - Part 1: General Requirements (European Union)
IEC 60950-1:2005, Second Edition	Information Technology Equipment – Safety - Part 1: General Requirements (International)

Place Battery Marking

There is insufficient space on this Desktop Board to provide instructions for replacing and disposing of the Lithium ion coin cell battery. For system safety certification, the statement below or an equivalent statement is required to be permanently and legibly marked on the chassis near the battery.

CAUTION

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

A suitable caution label is included with Intel Desktop Board DH57JG.

For information about replacing the battery, go to page 53.

European Union Declaration of Conformity Statement

We, Intel Corporation, declare under our sole responsibility that the product Intel® Desktop Board DH57JG is in conformity with all applicable essential requirements necessary for CE marking, following the provisions of the European Council Directives 2004/108/EC (EMC Directive) and 2006/95/EC (Low Voltage Directive).

The product is properly CE marked demonstrating this conformity and is for distribution within all member states of the EU with no restrictions.

This product follows the provisions of the European Directives 2004/108/EC and 2006/95/EC.

Čeština Tento výrobek odpovídá požadavkům evropských směrnic 2004/108/EC a 2006/95/EC.

Dansk Dette produkt er i overensstemmelse med det europæiske direktiv 2004/108/EC & 2006/95/EC.

Dutch Dit product is in navolging van de bepalingen van Europees Directief 2004/108/EC & 2006/95/EC.

Eesti Antud toode vastab Euroopa direktiivides 2004/108/EC ja 2006/95/EC kehtestatud nõuetele.

Suomi Tämä tuote noudattaa EU-direktiivin 2004/108/EC & 2006/95/EC määräyksiä.

Français Ce produit est conforme aux exigences de la Directive Européenne 2004/108/EC & 2006/95/EC.

Deutsch Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 2004/108/EC & 2006/95/EC.

Ελληνικά Το παρόν προϊόν ακολουθεί τις διατάξεις των Ευρωπαϊκών Οδηγιών 2004/108/EC και 2006/95/EC.

Magyar E termék megfelel a 2004/108/EC és 2006/95/EC Európai Irányelv előírásainak.

Icelandic Þessi vara stenst reglugerð Evrópska Efnahags Bandalagsins númer 2004/108/EC & 2006/95/EC.

Italiano Questo prodotto è conforme alla Direttiva Europea 2004/108/EC & 2006/95/EC.

Latviešu Šis produkts atbilst Eiropas Direktīvu 2004/108/EC un 2006/95/EC noteikumiem.

Lietuvių Šis produktas atitinka Europos direktyvų 2004/108/EC ir 2006/95/EC nuostatas.

Malti Dan il-prodott hu konformi mal-provvedimenti tad-Direttivi Ewropej 2004/108/EC u 2006/95/EC.

Norsk Dette produktet er i henhold til bestemmelsene i det europeiske direktivet 2004/108/EC & 2006/95/EC.

Polski Niniejszy produkt jest zgodny z postanowieniami Dyrektyw Unii Europejskiej 2004/108/EC i 2006/95/EC.

Portuguese Este produto cumpre com as normas da Diretiva Européia 2004/108/EC & 2006/95/EC.

Español Este producto cumple con las normas del Directivo Europeo 2004/108/EC & 2006/95/EC.

Slovensky Tento produkt je v súlade s ustanoveniami európskych direktív 2004/108/EC a 2006/95/EC.

Slovenščina Izdelek je skladen z določbami evropskih direktiv 2004/108/EC in 2006/95/EC.

Svenska Denna produkt har tillverkats i enlighet med EG-direktiv 2004/108/EC & 2006/95/EC.

Türkçe Bu ürün, Avrupa Birliği'nin 2004/108/EC ve 2006/95/EC yönergelerine uyar.

Product Ecology Statements

The following information is provided to address worldwide product ecology concerns and regulations.

Recycling Considerations

As part of its commitment to environmental responsibility, Intel has implemented the Intel® Product Recycling Program to allow retail consumers of Intel's branded products to return used products to selected locations for proper recycling.

Please consult http://www.intel.com/intel/other/ehs/product_ecology
for the details of this program, including the scope of covered products, available locations, shipping instructions, terms and conditions, etc.

中文

作为其对环境责任之承诺的部分，英特尔已实施 Intel Product Recycling Program （英特尔产品回收计划），以允许英特尔品牌产品的零售消费者将使用过的产品退还至指定地点作恰当的重复使用处理。

请参考http://www.intel.com/intel/other/ehs/product_ecology
了解此计划的详情，包括涉及产品之范围、回收地点、运送指导、条款和条件等。

Deutsch

Als Teil von Intels Engagement für den Umweltschutz hat das Unternehmen das Intel Produkt-Recyclingprogramm implementiert, das Einzelhandelskunden von Intel Markenprodukten ermöglicht, gebrauchte Produkte an ausgewählte Standorte für ordnungsgemäßes Recycling zurückzugeben.

Details zu diesem Programm, einschließlich der darin eingeschlossenen Produkte, verfügbaren Standorte, Versandanweisungen, Bedingungen usw., finden Sie auf der http://www.intel.com/intel/other/ehs/product_ecology

Español

Como parte de su compromiso de responsabilidad medioambiental, Intel ha implantado el programa de reciclaje de productos Intel, que permite que los consumidores al detalle de los productos Intel devuelvan los productos usados en los lugares seleccionados para su correspondiente reciclado.

Consulte la http://www.intel.com/intel/other/ehs/product_ecology
para ver los detalles del programa, que incluye los productos que abarca, los lugares disponibles, instrucciones de envío, términos y condiciones, etc.

Français

Dans le cadre de son engagement pour la protection de l'environnement, Intel a mis en œuvre le programme Intel Product Recycling Program (Programme de recyclage des produits Intel) pour permettre aux consommateurs de produits Intel de recycler les produits usés en les retournant à des adresses spécifiées.

Visitez la page Web http://www.intel.com/intel/other/ehs/product_ecology pour en savoir plus sur ce programme, à savoir les produits concernés, les adresses disponibles, les instructions d'expédition, les conditions générales, etc.

日本語

インテルでは、環境保護活動の一環として、使い終えたインテル ブランド製品を指定の場所へ返送していただき、リサイクルを適切に行えるよう、インテル製品リサイクル プログラムを発足させました。

対象製品、返送先、返送方法、ご利用規約など、このプログラムの詳細情報は、
http://www.intel.com/intel/other/ehs/product_ecology（英語）をご覧ください。

Malay

Sebagai sebahagian daripada komitmennya terhadap tanggungjawab persekitaran, Intel telah melaksanakan Program Kitar Semula Produk untuk membenarkan pengguna-pengguna runcit produk jenama Intel memulangkan produk terguna ke lokasi-lokasi terpilih untuk dikitarkan semula dengan betul.

Sila rujuk http://www.intel.com/intel/other/ehs/product_ecology untuk mendapatkan butir-butir program ini, termasuklah skop produk yang dirangkumi, lokasi-lokasi tersedia, arahan penghantaran, terma & syarat, dsb.

Portuguese

Como parte deste compromisso com o respeito ao ambiente, a Intel implementou o Programa de Reciclagem de Produtos para que os consumidores finais possam enviar produtos Intel usados para locais selecionados, onde esses produtos são reciclados de maneira adequada.

Consulte o site http://www.intel.com/intel/other/ehs/product_ecology (em Inglês) para obter os detalhes sobre este programa, inclusive o escopo dos produtos cobertos, os locais disponíveis, as instruções de envio, os termos e condições, etc.

Russian

В качестве части своих обязательств к окружающей среде, в Intel создана программа утилизации продукции Intel (Product Recycling Program) для предоставления конечным пользователям марок продукции Intel возможности возврата используемой продукции в специализированные пункты для должной утилизации.

Пожалуйста, обратитесь на веб-сайт http://www.intel.com/intel/other/ehs/product_ecology за информацией об этой программе, принимаемых продуктах, местах приема, инструкциях об отправке, положениях и условиях и т.д.

Türkçe

Intel, çevre sorumluluğuna bağımlılığının bir parçası olarak, perakende tüketicilerin Intel markalı kullanılmış ürünlerini belirlenmiş merkezlere iade edip uygun şekilde geri dönüştürmesini amaçlayan Intel Ürünleri Geri Dönüşüm Programı'nı uygulamaya koymuştur.

Bu programın ürün kapsamı, ürün iade merkezleri, nakliye talimatları, kayıtlar ve şartlar v.s dahil bütün ayrıntılarını ögrenmek için lütfen http://www.intel.com/intel/other/ehs/product_ecology web sayfasına gidin.

Lead-free 2LI/Pb-free 2LI Board

The electronics industry is transitioning to European Union (EU) Restriction of Hazardous Substances (RoHS)-compliant products. The RoHS legislation restricts the use of six materials. One of these restricted materials is lead. Lead is the most common and problematic of the RoHS restricted materials.

There are exemptions in RoHS that allow the use of lead in some very limited locations in electronic products. Maximum lead concentration values have been established for RoHS-compliant electronic products that allow up to 1000 ppm of lead.

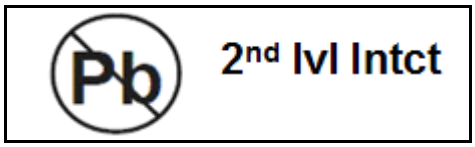
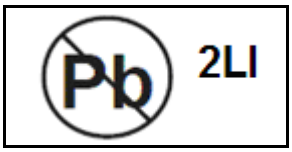
Lead-free/Pb-free is a nickname that is often used (or misused) for RoHS-compliant products. In this case, the term "Lead-free/Pb-free" means that lead has been removed where required by the RoHS legislation but still may exist as an impurity below 1000 ppm.

The term "Lead-free 2LI/Pb-free 2LI" means lead-free second level interconnect (2LI). The balls, leads, or pads used to connect the component to a printed circuit board are lead-free, but the first level interconnect (FLI) is not lead-free. The use of lead in the FLI is acceptable because of the RoHS "flip chip" or "die bump" interconnect exemption.

Intel Desktop Board DH57JG is a lead-free second level interconnect product. Table 20 shows the lead-free second level interconnect marks as they appear on the board and accompanying collateral. These marks are based on JEDEC standard J-STD-609, “Marking and Labeling of Components, PCBs and PCBAs to Identify Lead, Lead Free and Other Attributes.”

For more information concerning Intel’s lead-free initiatives, refer to: http://www.intel.com/technology/silicon/leadfree.htm.

Table 20. Lead-Free Second Level Interconnect Marks

Description	Mark
This symbol is used to identify electrical and electronic assemblies and components in which the Pb concentration level in the Desktop Board substrate and the solder connections from the board to the components (second-level interconnect) is not greater than 0.1% by weight (1000 ppm).	 **or**  **or** 

Restriction of Hazardous Substances (RoHS)

EU RoHS

EU RoHS Directive 2002/95/EC restricts the use of the following six materials in various types of electronic and electrical equipment:

- Lead
- Mercury
- Cadmium
- Hexavalent chromium
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

The maximum concentrations allowed are 0.1% or 1000 ppm (except for cadmium, which is limited to 0.01% or 100 ppm) by weight of homogeneous material.

Intel Desktop Board DH57JG complies with these restrictions.

China RoHS

"China RoHS" is the term used by industry generally to describe legislation implemented by the Ministry of Information Industry (MII) in the People's Republic of China for the control of pollution by electronic information products (EIP). The official title of the China RoHS regulation is "Management Methods for Controlling Pollution by Electronic Information Products."

China RoHS bans the same substances and has the same limits as EU RoHS. However, the China RoHS regulation requires specific product marking and a self-declaration of the controlled substances contained in each product.

Intel Desktop Board DH57JG is a China RoHS-compliant product.

The required China RoHS mark indicates the product's Environmental Friendly Usage Period (EFUP). The EFUP is defined as the number of years for which listed controlled substances will not leak or chemically deteriorate while in the product. The EFUP for Intel Desktop Boards has been determined to be 10 years.

The EFUP for Intel Desktop Board DH57JG is shown in Table 21.

Table 21. China RoHS Environmentally Friendly Use Period Mark

Description	Mark
This is an example of the symbol used on Intel Desktop Boards and associated collateral. The color of the mark may vary depending upon the application. The Environmental Friendly Usage Period (EFUP) for Intel Desktop Boards has been determined to be 10 years.	

The China MII stipulates that a material Self Declaration Table (SDT) must be included in a product's user documentation. The SDT for Intel Desktop Board DH57JG is shown in Figure 26.

关于符合中国《电子信息产品污染控制管理办法》的声明

Management Methods on Control of Pollution from
Electronic Information Products
(China RoHS declaration)

产品中有毒有害物质的名称及含量

部件名称 (Parts)	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
主板组件 Motherboard Assembly	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

○：Indicates that this hazardous substance contained in all homogeneous materials of this part is below the limit requirement in SJ/T 11363-2006.

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

×：Indicates that this hazardous substance contained in at least one of the homogeneous materials of this part is above the limit requirement in SJ/T 11363-2006.

对销售之日的所售产品,本表显示我公司供应链的电子信息产品可能包含这些物质。注意：在所售产品中可能会也可能不会含有所有所列的部件.

This table shows where these substances may be found in the supply chain of our electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

Figure 26. Intel Desktop Board DH57JG China RoHS Material Self Declaration Table

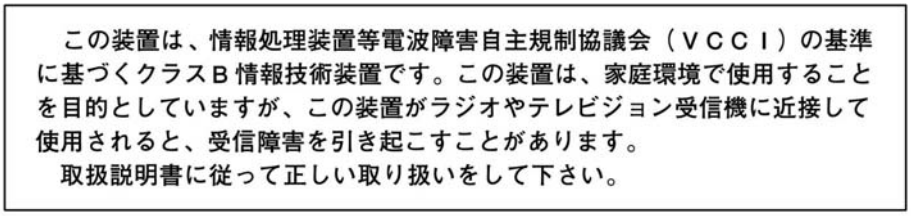
EMC Regulations

Intel Desktop Board DH57JG complies with the EMC regulations stated in Table 22 when correctly installed in a compatible host system.

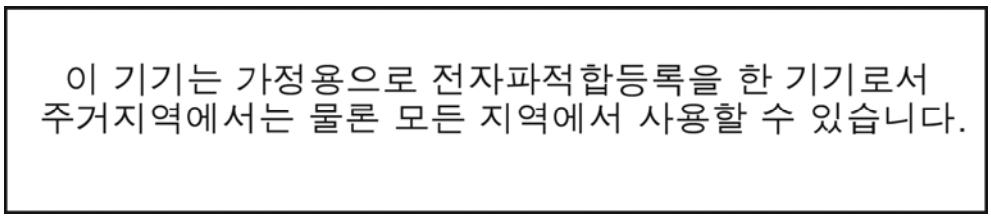
Table 22. EMC Regulations

Regulation (Class B)	Title
FCC 47 CFR Part 15, Subpart B	Title 47 of the Code of Federal Regulations, Part 15, Subpart B, Radio Frequency Devices. (USA)
ICES-003 Issue 4	Interference-Causing Equipment Standard, Digital Apparatus. (Canada)
EN55022:2006	Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (European Union)
EN55024:1998	Information Technology Equipment – Immunity Characteristics Limits and methods of measurement. (European Union)
EN55022:2006	Australian Communications Authority, Standard for Electromagnetic Compatibility. (Australia and New Zealand)
CISPR 22:2005 +A1:2005 +A2:2006	Limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment. (International)
CISPR 24:1997 +A1:2001 +A2:2002	Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement. (International)
VCCI V-3/2007.04, V-4/2007.04	Voluntary Control for Interference by Information Technology Equipment (Japan)
KN-22, KN-24	Korean Communications Commission – Framework Act on Telecommunications and Radio Waves Act. (South Korea).
CNS 13438:2006	Bureau of Standards, Metrology and Inspection. (Taiwan)

Japanese Kanji statement translation: This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.



Korean Class B statement translation: This is household equipment that is certified to comply with EMC requirements. You may use this equipment in residential environments and other non-residential environments.



Ensure Electromagnetic Compatibility (EMC) Compliance

Before computer integration, make sure that the power supply and other modules or peripherals, as applicable, have passed Class B EMC testing and are marked accordingly.

Pay close attention to the following when reading the installation instructions for the host chassis, power supply, and other modules:

- Product certifications or lack of certifications
- External I/O cable shielding and filtering
- Mounting, grounding, and bonding requirements
- Keying connectors when mating the wrong connectors could be hazardous

If the power supply and other modules or peripherals, as applicable, are not Class B EMC compliant before integration, then EMC testing may be required on a representative sample of the newly completed computer.

Product Certifications

Board-Level Certification Markings

Intel Desktop Board DH57JG has the product certification markings shown in Table 23.

Table 23. Product Certification Markings

Description	Mark
UL joint US/Canada Recognized Component mark. Includes adjacent UL file number for Intel Desktop Boards: E210882.	
FCC Declaration of Conformity logo mark for Class B equipment. Includes Intel name and DH57JG model designation.	
CE mark. Declaring compliance to European Union (EU) EMC directive and Low Voltage directive.	
Australian Communications Authority (ACA) and New Zealand Radio Spectrum Management (NZ RSM) C-tick mark. Includes adjacent Intel supplier code number, N-232.	
Japan VCCI (Voluntary Control Council for Interference) mark.	
S. Korea KCC (Korean Communications Commission) mark. Includes adjacent KCC certification number: CPU-DH57JG (B).	
Taiwan BSMI (Bureau of Standards, Metrology and Inspections) mark. Includes adjacent Intel company number, D33025.	
Printed wiring board manufacturer's recognition mark. Consists of a unique UL recognized manufacturer's logo, along with a flammability rating (solder side).	V-0

Chassis and Component Certifications

Ensure that the chassis and certain components; such as the power supply, peripheral drives, wiring, and cables; are components certified for the country or market where used. Agency certification marks on the product are proof of certification. Typical product certifications include:

In Europe

The CE marking signifies compliance with all applicable European requirements. If the chassis and other components are not properly CE marked, a supplier's Declaration of Conformity statement to the European EMC directive and Low Voltage directive (as applicable), should be obtained. Additionally, other directives, such as the Radio and Telecommunications Terminal Equipment (R&TTE) directive may also apply depending on product features.

In the United States

A certification mark by a Nationally Recognized Testing Laboratory (NRTL) such as UL, CSA, or ETL signifies compliance with safety requirements. Wiring and cables must also be UL listed or recognized and suitable for the intended use. The FCC Class B logo for home or office use signifies compliance with electromagnetic interference (EMI) requirements.

In Canada

A nationally recognized certification mark such as CSA or cUL signifies compliance with safety requirements. The Industry Canada statement at the front of this product guide demonstrates compliance with Canadian EMC regulations.